▽ UNION OF AMERICAN REPUBLICS ▽

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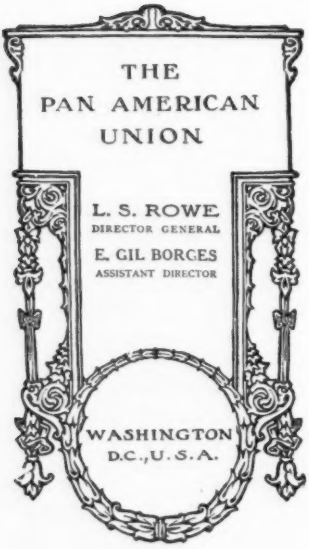

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THE FIRST SITE OF THE PAN AMERICAN UNION.

The organization, then known as the International Bureau of the American Republics, occupied this building from 1890 to 1910. Here was published 40 years ago the first edition of the BULLETIN.

BULLETIN
OF THE PAN AMERICAN UNION

VOL. LXVII OCTOBER 1933 No. 10

FORTIETH ANNIVERSARY OF THE BULLETIN OF THE PAN AMERICAN UNION

FOREWORD

By L. S. ROWE, Ph.D., LL.D.,
Director General of the Pan American Union

WITH the issue of the October number, the BULLETIN of the Pan American Union completes forty years of service to the nations of America. During that long period the BULLETIN has labored unremittingly to bring to the republics of this Continent a better appreciation of the essential unity of their economic interests and to enlighten public opinion with reference to the contributions which the nations of America are making to science, art, and literature. The English, Spanish, and Portuguese editions of the BULLETIN have been constant messengers of good will to every section of the Western World and as we look back upon the decades of its existence we can measure the great strides that have been made in the forward march of Pan Americanism.

The thanks of the Union are due the devoted Editors of the BULLETIN who, for the last forty years, have given the best of their energy to promoting the cause for which the Pan American Union was founded.

HIS EXCELLENCY GEN. OSCAR R. BENAVIDES, PRESIDENT OF PERU.

GENERAL OSCAR R. BENAVIDES
PRESIDENT OF PERU

A FEW hours after the assassination of President Sánchez Cerro of Peru, on April 30, 1933, the Constituent Congress of the Republic, meeting in special session, elected Gen. Oscar R. Benavides as Chief Executive for the remainder of the presidential term ending December 8, 1936.

General Benavides has had a long and distinguished military career. Born in Lima on March 15, 1876, he was educated at the National Military School. There he completed the course with highest honors, receiving as reward for his excellent scholarship a sword of honor from the hands of Gen. Morales Bermúdez, then President of the Republic. In 1906 the young officer was sent by the Government to France for special studies. He served in the French Army for four years, beginning in 1907, returning to Peru in 1911 to take command of an infantry regiment. While in France he had been promoted to the rank of lieutenant colonel, in recognition of his important services to his country as a member of the Armament Commission in Germany and Austria. In 1910 he had been decorated with the Cross of Chevalier of the Legion of Honor of France.

Promoted to a colonelcy by the Government in 1911, General Benavides was appointed in the following year Commander in Chief of the Third Region, whose headquarters were at Arequipa. He remained at that post until November 1913, when he was transferred to Lima and appointed Chief of Staff of the Army.

Disaffected with the administration then in power, he took command of the Army on February 4, 1914, in defense of the Constitution. On the same day Congress appointed him President of the Committee of Government, a position which he held until the following May, when he was named Provisional President of the Republic, with the rank of Brigadier General. His term as president ended with the election of Don José Pardo to that office in August 1915.

In 1916 General Benavides was sent to France for study; while abroad he visited many European battlefields as aide on the staff of General Neville. At the close of the war, his Government named him Minister to Italy, where he remained until his resignation in 1921. During the Presidency of General Sánchez Cerro, he served as Minister of Peru first in Spain and later in Great Britain. He resigned the latter post to return to his native land to assume the duties of Commander in Chief of National Defense, the position which he held at the time of his election to the Presidency.

FORTY YEARS OF TRADE WITH THE LATIN AMERICAN REPUBLICS

By Guillermo A. Suro

Editorial Staff, Bulletin of the Pan American Union

AGRICULTURE, industry, communications, and transportation have attained their greatest development in Latin America in the forty-odd years from the close of the nineteenth century to the present. The same period has seen the growth of the United States into a powerful mercantile nation with far-flung commercial and financial interests. Aided by the construction of the Panama Canal, the improvement of cable, telegraph, and shipping facilities, and, more recently, by the development of radio, telegraphic, and telephonic communication and the establishment of a comprehensive network of air lines, the financial and commercial relations between these two regions have shown a remarkable growth. The community of interests between the United States and the Latin American Republics and the complementary nature of their economic resources and needs have indeed been a firm basis for the development of sound economic relations.

Haltingly at first, and stimulated by the fortuitous assistance of the World War, the interchange of commodities with the Republics to the south has grown until the United States has become the principal market for the products of their fields, their mines, and their forests, and the main source of the manufactured commodities which they obtain from abroad. With the growth of trade, American capital investments in Latin American agricultural, mining, and public utility enterprises have expanded until today in no other region of the world are they as extensive.

Dependent as the Latin American Republics are for their income upon the exportation of a few all-important raw materials and foodstuffs and for the development of their natural resources upon the investment of foreign capital, the sharp decline in the prices of their products and the sudden check upon international credit which have resulted from the present world-wide depression have caused an unprecedented recession in the value of the trade of the United States with these Republics, as well as in the returns of American capital invested there. The barriers which the Latin American Republics and the United States have erected in defense of their respective national economies have further restricted the free movement of goods and capital essential to recovery. If any lessons are to be learned

from this situation it is the need for international cooperation in the solution of these problems. The present administration has announced its desire to follow such a policy, and to this end is negotiating trade agreements with the Latin American Republics.

TOTAL VALUE OF TRADE BETWEEN THE UNITED STATES AND THE LATIN AMERICAN REPUBLICS, 1893–1932 [1]

[Thousands of dollars]

Years [2]	United States imports from Latin American Republics	Percent of total United States imports	United States exports to Latin American Republics	Percent of total United States exports	Years [2]	United States imports from Latin American Republics	Percent of total United States imports	United States exports to Latin American Republics	Percent of total United States exports
1893	219,762	25.36	86,016	10.14	1914	467,946	24.70	279,362	11.81
1894	213,036	32.52	76,013	8.52	1915	556,345	33.23	248,623	8.98
1895	193,114	26.38	72,288	8.95	1916	759,211	34.54	407,797	9.41
1896	175,616	22.52	74,396	8.42	1917	960,236	36.10	584,738	9.29
1897	151,955	19.87	75,256	7.16	1918	1,023,419	34.74	717,744	12.12
1898	132,324	21.47	71,723	5.82	1918(6mos.)	517,708	34.85	349,601	11.01
1899	142,961	20.50	85,944	7.00	1919	1,318,803	33.77	934,388	11.79
1900	162,117	19.07	108,075	7.75	1920	1,766,078	33.45	1,488,324	18.08
1901	192,102	23.33	116,226	7.81	1921	691,250	27.54	758,070	16.90
1902	203,662	22.54	112,477	8.14	1922	792,329	25.45	522,930	13.64
1903	221,672	21.61	112,205	7.90	1923	1,026,097	27.05	658,878	15.80
1904	254,350	25.66	133,996	9.17	1924	1,034,873	28.66	736,696	16.04
1905	300,078	26.85	156,543	10.30	1925	1,066,447	23.81	844,597	17.20
1906	292,286	23.82	206,452	11.83	1926	1,041,678	23.50	834,224	17.34
1907	332,633	23.18	227,305	12.08	1927	959,391	22.92	804,030	16.52
1908	271,916	22.76	217,000	11.66	1928	948,125	23.17	831,575	16.21
1909	322,456	24.57	198,918	11.96	1929	1,014,127	23.05	911,749	17.39
1910	391,441	25.14	239,252	13.71	1930	677,720	22.14	628,176	16.34
1911	369,797	24.21	270,663	13.20	1931	478,165	22.87	312,617	12.89
1912	420,823	25.45	293,311	13.30	1932	323,190	24.43	195,726	12.13
1913	441,406	24.34	320,919	13.01					

[1] Compiled from "Foreign Commerce and Navigation of the United States."
[2] Figures cover fiscal years ended June 30, 1893 to 1918; calendar years thereafter.

The trade between the United States and Latin America in the years under review may be roughly divided into three periods—1893–1900, 1900–14, and 1914–32.

The last decade of the nineteenth century is significant because it was during this period that an attempt was first made by the United States to develop closer commercial relations with Latin America through the negotiation of reciprocity agreements. Earlier treaties of this kind had been concluded, it is true, but had failed of ratification by Congress. It was not until the passage of the Tariff Act of 1890 that the President was authorized to embark upon a comprehensive program of tariff bargaining without having to submit the agreements he might negotiate for ratification by the Senate or approval by Congress. The act provided for the continued admission free of duty of coffee, tea, and hides, and the transfer to the free list of sugar and molasses. The President was empowered to suspend by proclamation the free entry of these products, and to impose a penalty duty upon them when imported from countries which, in his opinion, were imposing duties upon American products "reciprocally

unequal and unreasonable." The reciprocity list was especially adapted to bargaining with Central and South America. By May 26, 1892, reciprocity arrangements had been concluded with Brazil; the Dominican Republic; Spain, for Cuba and Puerto Rico; El Salvador; Nicaragua; Honduras; Guatemala; and Great Britain, for the West India colonies. The only countries outside the Western Hemisphere with which agreements were negotiated on their own behalf were Germany and Austria-Hungary, important beet-sugar producing countries. No agreements were signed with tea producing countries. These agreements were automatically terminated by the Tariff Act of 1894, which repealed the reciprocity provision of the Tariff Act of 1890 and established a duty on sugar. Their abrupt termination occasioned protests, resentment, and retaliatory measures.

While the treaties were in force, imports of reciprocity articles, especially sugar, increased over that of the years immediately preceding, while imports of other articles decreased. In 1894, while the total imports of the United States had decreased 13 percent as compared with the 3-year average 1888–90, imports of reciprocity articles increased 27 percent and imports of nonreciprocity articles decreased 26 percent. The articles in the reciprocity list comprised the bulk of United States imports from the Latin American countries with which agreements had been made. The imports of these commodities increased from 78 percent of the total imports of the United States from those countries in 1890 to 84 percent in 1894. The importation of these articles from the countries with which no agreements were negotiated remained about the same, while imports from countries to which the penalty duties were applied—Colombia, Venezuela, and Haiti—showed a marked decrease during this period.

Despite the fact that Latin America was suffering from the effects of the world-wide financial crisis which began in 1890, as well as from widespread revolutionary disturbances, United States exports to the American countries with which reciprocity agreements were in effect, as a whole, showed a substantial increase, while exports to the rest of the world decreased. Upon the termination of the agreements the reverse was true.

All in all, the trade between the United States and Latin America during the last decade of the nineteenth century made little progress. Although imports from Mexico, Argentina, and Chile increased considerably, the proportion of imports from Latin North America was less than immediately before the Civil War and the proportion from South America no greater than in the seventies. There was an increase in exports to Mexico, but trade with the West Indies and Central America was depressed. With the exception of Argentina, whose importation of United States products increased, exports to South America did not make much progress.

UNITED STATES TRADE WITH THE LATIN AMERICAN REPUBLICS,[1]

1893–1932

[Values in thousands of dollars, i.e., 000 omitted]

	1893	1900[2]	1914	1918	1920	1929	1932
United States imports from—							
Mexico	33,555	28,646	86,281	158,644	179,332	117,738	37,423
Guatemala	2,555	2,403	4,595	8,012	20,076	8,470	4,501
El Salvador	1,356	739	1,390	8,307	11,945	3,830	1,144
Honduras	685	989	2,751	5,295	8,306	12,833	9,004
Nicaragua	1,400	1,520	1,450	4,792	7,971	5,748	1,964
Costa Rica	2,309	2,980	3,353	8,967	10,133	5,203	3,687
Panama			4,473	8,757	8,273	5,351	3,530
Cuba	78,707	31,372	146,845	278,635	721,694	207,421	58,330
Dominican Republic	2,396	3,680	5,583	8,465	33,878	8,465	3,380
Haiti	736	1,185	1,172	6,757	8,973	1,445	612
North American Republics	123,699	73,514	257,893	496,631	1,010,551	376,504	123,575
Argentina	5,239	8,114	56,274	228,388	207,777	117,581	15,654
Bolivia	6			452	10,495	379	6
Brazil	76,222	58,073	95,001	98,038	227,588	207,686	82,263
Chile	3,996	7,113	24,239	166,083	120,516	102,025	12,278
Colombia	3,573	4,308	17,548	24,723	53,642	103,525	60,846
Ecuador	960	1,524	3,356	10,122	14,480	5,830	2,386
Paraguay			61	140	1,180	529	99
Peru	819	2,123	11,270	34,423	63,679	30,167	3,685
Uruguay	1,623	1,848	9,597	35,583	33,781	18,677	2,104
Venezuela	3,625	5,500	10,917	11,957	22,389	51,224	20,294
South American Republics	96,063	88,603	228,263	609,909	755,527	637,623	199,615
Total imports from Latin American Republics	219,762	162,117	486,156	1,106,540	1,766,078	1,014,127	323,190
United States exports to—							
Mexico	19,569	34,975	33,215	97,789	207,859	133,863	32,575
Guatemala	1,764	785	3,127	4,242	10,203	11,524	2,820
El Salvador	1,138	679	1,818	3,903	8,148	8,050	2,289
Honduras	472	1,181	5,601	5,034	15,362	12,811	4,475
Nicaragua	938	1,818	2,306	4,504	9,543	7,032	1,993
Costa Rica	1,211	1,462	3,045	2,100	9,778	8,312	2,435
Panama			20,975	21,116	33,333	41,133	15,609
Cuba	21,158	26,513	67,877	227,156	515,209	128,909	28,775
Dominican Republic	1,143	1,317	4,370	16,120	45,523	14,190	4,630
Haiti	5,472	2,997	3,841	9,069	19,900	8,790	4,005
North American Republics	55,865	71,727	146,175	391,033	874,858	374,614	99,606
Argentina	4,980	11,558	27,128	105,105	213,726	210,288	31,670
Bolivia	25	59	806	5,269	4,573	5,985	2,160
Brazil	12,388	11,578	23,276	57,391	156,740	108,788	28,600
Chile	2,981	3,288	13,628	66,404	55,275	55,776	3,568
Colombia	3,156	2,711	5,784	10,546	59,133	48,983	10,670
Ecuador	847	1,216	2,504	4,172	12,244	6,069	1,754
Paraguay		5	83	701	1,814	1,500	
Peru	637	1,693	5,876	21,716	47,036	26,176	3,965
Uruguay	960	1,817	4,153	16,193	33,721	28,245	3,281
Venezuela	4,207	2,453	5,024	7,161	29,204	45,325	10,235
South American Republics	30,151	36,348	88,262	294,678	613,466	537,135	96,120
Total exports to Latin American Republics	86,016	108,075	234,437	685,711	1,488,324	911,749	195,726

[1] Compiled from "Foreign Commerce and Navigation of the United States."
[2] Fiscal year ending June 30.

During the period from 1900 to 1914 trade between the United States and the Latin American Republics expanded slowly but steadily. Better markets for American products were developed in Mexico, Cuba, Brazil, Chile, Peru, and Uruguay, and progress was made in exports to Argentina. The Latin North American Republics, especially Cuba and Mexico, made a great advance as suppliers of United States imports, the importation of Cuban products having been stimulated by the reciprocity treaty of 1902. In the South American group, increased quantities were imported from Brazil, Chile, Peru, Colombia, and Venezuela, imports from Brazil amounting to $123,882,000 in the fiscal year 1912. The economic development which became noticeable in most Latin American countries during the last years of the nineteenth century was accelerated during this period by the capital obtained through an increase in foreign loans for the development of natural resources. Railway construction was stimulated and a beginning was made in the establishment of rapid means of communication. By 1914, United States imports and exports from and to the Latin American Republics showed increases of 35 and 39 percent respectively over 1900; in that year, in contrast with the general impression that prior to the World War the trade of the United States with the Republics of Latin America was negligible, exports amounted to $108,075,000 and imports were valued at $162,117,000.

The disruption of commerce and shipping brought about by the World War shifted part of the foreign trade of the Latin American nations with the European belligerants to the United States. In 1918 the United States had not only outdistanced the United Kingdom as an exporter of goods to the Latin American Republics, but the proportion of Latin American imports which it supplied was greater than that of Great Britain, Germany, and France combined.

As the war progressed, the Latin American Republics supplied an increasingly large proportion of United States imports, principally because of increased imports of sugar from Cuba, nitrate and copper from Chile, and meat, grain, and other foodstuffs from Argentina. Before the war many Latin American products were first exported to Europe to be later purchased by the United States. As a result of the lack of direct shipping facilities to European ports, this indirect trade between the United States and Latin America was converted to a great extent into a direct trade. In turn, during the war years the United States developed a large reexport trade with the rest of the world in such products as coffee, sugar, rubber, cocoa, hides, and skins.

Perhaps the outstanding factor in the growth of trade between the United States and the Latin American Republics since 1914 has been

the investment of about $4,000,000,000 of American capital in that region. Prior to the war the investments of the United States in Latin America were relatively small. In 1913 they were estimated at $1,300,000,000, Latin American financing up to that time having been done largely by Great Britain, France, and other European countries. At the end of 1932, United States investments in Latin America were estimated at $5,157,000,000, or about one third of the total American private long-term investments in all foreign countries. It is estimated that of the American capital invested in Latin America, $3,653,000,000 represent direct investments in the exploitation of agricultural resources, such as sugar in Cuba and bananas in Central America, in mining, especially of petroleum and copper, and in public utility enterprises, such as railway, telephone, and light companies. In no other region are American direct investments so extensive. The remaining $1,504,000,000 represent national, State, provincial, and municipal bonds as well as other miscellaneous securities purchased by United States investors.

The acceleration in the trade between the United States and the Latin American Republics which took place during the World War continued rapidly during the post-war years until it reached its peak in 1920, when exports amounted to $1,488,324,000 and imports were valued at $1,766,078,000. This enormous increase, however, was due principally to the rapid advance in prices which took place, particularly in the last years of the war. It was followed by drastic declines in 1921 and 1922. From 1922 to 1929, however, there was a steady growth of trade, with the exception of a minor recess in 1927 as a result of unstable prices. The decline in commodity prices and the practical cessation of foreign investments since 1929 has reduced this trade to the lowest level since 1909.

Over 85 percent of Latin American exports is comprised of only 19 commodities. As far as their foreign trade is concerned, almost all the republics are 1-, 2-, or 3-product countries. During the last quarter of 1932, as compared with the first quarter of 1928, the price of sugar in the world markets had declined 62 percent; that of coffee, 51 percent; copper, 62 percent; tin, 57 percent; and wheat, 65 percent. The effect of such price declines is easily appreciated if one remembers that sugar and tin represent about 75 percent of the exports of Cuba and Bolivia, respectively, and that coffee is the principal crop in Brazil, Colombia, Venezuela, Guatemala, Costa Rica, El Salvador, Nicaragua, and Haiti. Upon the sale of these products the Latin American Republics depend for the payment of imports. A reduction in the demand for them or in their price means reduced purchases of foreign merchandise, and since the Latin American Governments derive their income largely from custom receipts, a

decline in exports and imports in turn causes a curtailment of government revenues.

That Latin American countries must maintain a favorable trade balance in order to meet charges for imports and foreign investments is axiomatic. They have endeavored to do this through the stimulation of exports and the curtailment of imports by drastic trade control measures, but even those countries successful in maintaining a favorable trade balance have found that in many cases the difference between imports and exports was not sufficient to meet the service on their foreign obligations. Unable to borrow abroad in order to readjust their balance of payments, many of the countries have exported part of their gold reserves and when, despite serious inroads into their gold balances, their currencies have continued to depreciate, suspensions of the gold standard, controls of foreign exchange operations, and moratoria upon foreign payments have followed. Trade recovery in Latin America is thus dependent upon the maintenance of higher prices and the resumption of foreign lending, factors over which unfortunately these countries have little or no control.

* * *

Lacking the high purchasing power of European countries, the Latin American Republics take only 12 percent of the total exports of the United States as compared with Europe's 49 percent; yet the natural limitations of Europe as a market for American products makes Latin America today more than ever an influential factor in the future development of the foreign trade of the United States. Forty years ago the majority of this country's exports were agricultural products. The basis of American export trade has progressively shifted, however, until today the principal class of exports is manufactured goods. Europe looks upon the United States as a source of foodstuffs and raw materials; Latin America, on the other hand, wants from them the finished products which it does not produce. In view of this fact, trade with the Latin American Republics assumes paramount importance.

The National Industrial Conference Board, in its tentative conclusions as to the general trend of the United States export trade,[1] states: "Broadly speaking, the countries whose purchases seem likely to increase most rapidly are those which want our fabricated products, especially our mechanical devices; countries whose purchases seem likely to increase less rapidly are those which import a larger proportion of our foods, materials, and oil products." In 1890 Europe took 80 percent of United States exports. At present this proportion has been reduced to about 50 percent. "Indications are," says

[1] "Trends in the Foreign Trade of the United States," National Industrial Conference Board, New York, 1930.

the Board, "that in the near future our share of the total exports going to Europe will tend to decline even more rapidly than it has since the turn of the century. It is probable that relatively less cotton, less copper, less grain, and less refined petroleum will be obtained from the United States, in proportion as the industrial progress of Europe, which was delayed by the World War, again acquires momentum and begins to overtake that of the United States, which made its greatest advances during the war period. Although American industrialists have been quick to appreciate the situation and to retain a share of the market by transferring part of their production abroad, the effect will doubtless be reflected in our exports to Europe."

As to the future of United States trade with Latin America, the Board prophesies, "Present trends indicate that the proportion of our exports to North and South America will increase, not merely by reason of the relative decline in exports to Europe, but because of expansion of their own purchases from the United States. In Latin America, the favorable factors are industrial progress, road development, and a large potential market of buyers still below the margin of effective purchasing power, but affording a prospect of rapid expansion. Although the influence of these factors may be offset to some extent by adverse developments in the more immediate prospect, progress should be at an accelerated rate over a period of years."

The depression has accelerated the growth of domestic industries in Latin America. Cuba, for example, is now producing not only the bulk of its food requirements, which it formerly imported from the United States, but a large variety of such articles as clothes, shoes, furniture, and construction materials of all kinds. Aside from the fact that the development of such industries will create an increasing demand for machinery and tools, a demand which the United States is particularly well fitted to supply, the higher living standard and increased purchasing power that industrial development will bring to Latin America is more likely to broaden than narrow the demand for such products as motor cars and accessories, films and photographic supplies, electrical appliances, sewing machines, domestic refrigerators, typewriters, cash registers and office appliances, radio apparatus, and new types of agricultural and road-building machinery, in the production of which the United States excels, and which should form the permanent increase in United States exports to Latin America.

Just as the larger part of United States exports to the Latin American Republics consists of manufactured products, so the imports of the United States from these republics are raw materials and tropical and semitropical foodstuffs, products for which this country is largely

dependent upon Latin America. Thus: Ninety-four percent of the coffee imports of the United States comes from Brazil, Colombia, Venezuela, Mexico, and Guatemala. Cuba supplies 98 percent of the cane sugar imported from foreign countries. Central America, Mexico, Panama, Cuba, and Colombia supply 81 percent of the bananas and Brazil, the Dominican Republic, Venezuela, and Ecuador 40 percent of the cacao. Ninety percent of the crude petroleum imports come from Venezuela, Colombia, Mexico, Ecuador, and Peru. Ecuador and Brazil supply practically all the imports of tagua nuts (vegetable ivory) and carnauba wax, respectively. Of United States imports of logwood, Haiti and Mexico supply 95 percent. From Paraguay and Argentina come all the quebracho wood and extract; from Mexico all the guayule; from Brazil, Peru, Colombia, and Venezuela, 92 percent of the balata; from Cuba and the Dominican Republic, 77 percent of the imports of molasses; and from Argentina almost all of the casein and flaxseed imported.

Although the changes in the imports of the United States have been less marked than those in the exports, the trade of this country over a long period shows that the proportion of raw materials and partly finished manufactures to total imports is increasing, with a corresponding decrease in the proportion of imports of finished manufactures ready for consumption.

The Industrial Conference Board believes that United States purchases of manufactured articles "will probably continue to be chiefly specialties, distinctive in quality or design, for which price is a secondary consideration", and that imports of such goods "tend to vary with conditions of prosperity, but they increase less rapidly than imports of commodities used for consumption by the population at large. Such commodities are materials needed for general industrial use and a few staple foods, such as sugar and coffee."

Europe in 1890 supplied 57.1 percent of United States imports; in 1932, 29.4 percent. The Board believes that "we may expect a continued decline in the proportion, though not necessarily in total value, of imports from Europe. Europe does not have for export the kind of goods that the United States particularly requires or wants." As to the prospects of increased imports from Latin America, it says: "Owing partly to the slower increase of imports from Europe and Asia and partly to a steady increase in imports from Latin America, especially if the petroleum resources of Colombia and Venezuela are developed, we may expect the share of Latin America in our trade to rise again to the pre-war level. . . ."

THE EVOLUTION OF INTERNATIONAL AMERICAN CONFERENCES

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INTERNATIONAL cooperation has always been a characteristic of the American Continent. In fact, the very existence of many of them as independent nations is due in large measure to the assistance mutually rendered during their struggle for independence. Because they made common cause with one another the achievement of independence was, if not made possible, at least facilitated and expedited by many years. This characteristic is most forcefully illustrated in the case of the Spanish colonies of South America. In the north and in the south the peoples of the several Provinces, after their own particular objects had been achieved, joined with their neighbors until the last obstacle to the complete independence of all the peoples had been removed. Notwithstanding the fact that the conditions under which they existed were common to all and therefore contributed to giving them a common viewpoint, such joint action, embracing the people of a large part of the continent, affords an extraordinary demonstration of continental solidarity and unity of thought and action.

With the achievement of independence, this policy of mutual helpfulness and cooperation found expression in the practice of convening international conferences, at which representatives of the several States met to discuss their common problems. Within a few years after the newly created States had been set up, this feature of present-day international relations was inaugurated by the Republics of the American Continent when the famous Congress of Panama, convened by Bolívar, met in 1826. Henry Clay, then secretary of state, visualized the far-reaching consequences that this new policy of international conferences was to have when he expressed himself in the following words:

> The assembling of a congress at Panama composed of diplomatic representatives from independent American nations will form a new epoch in human affairs. The fact itself, whatever may be the issue of the conferences of such a congress, cannot fail to challenge the attention of the present generation of the civilized world, and to command that of posterity.

The Congress of Panama was the forerunner of a number of other gatherings in which the Republics of Latin America participated.

The Government of the United States was invited to the Congress of 1826, but although the invitation was accepted the delegates failed to arrive in time to take part in the deliberations; in the subsequent conferences, however, and up to the First International Conference of American States in 1889, representation in American conferences was limited to the nations of Latin America.

In 1847, and on invitation of the Government of Peru, a congress was held at Lima, in which the Republics of Bolivia, Chile, Ecuador, New Granada (Colombia), and Peru were represented. A second Congress of Lima was held in 1864, at which representatives of Argentina, Bolivia, Chile, Ecuador, Colombia, Guatemala, Peru, and Venezuela were present. Another international congress was held at Lima in 1877, in which delegates of Argentina, Bolivia, Chile, Costa Rica, Ecuador, Peru, and Venezuela participated. In 1883, on the occasion of the centenary of the birth of Bolívar, a Bolivarian Congress met at Caracas, with representatives in attendance from Argentina, Bolivia, Colombia, El Salvador, Mexico, Peru, and Venezuela. This was followed by the South American Congress at Montevideo, in 1888-89, with delegates present from Argentina, Bolivia, Brazil, Chile, Paraguay, Peru, and Uruguay.

The conferences held on the American Continent between the Panama Congress of 1826 and the congress at Montevideo of 1888, were what might be called regional in character. Beginning with 1889, however, the conferences assumed a continental, or inter-American scope, embracing all the independent nations of the Western Hemisphere. The First International Conference of American States met at Washington in 1889-90, on invitation of the Government of the United States. Since then, six of this series of conferences have been held, and the Seventh International Conference of American States is scheduled to meet at Montevideo in December next.

NATURE OF EARLIER INTER-AMERICAN CONFERENCES

The earlier conferences between the American Republics were primarily political in character, and had for their principal object the consideration of measures for the common defense and mutual protection of the participating States. For many years after independent governments had been established, rumors and threats were rife of contemplated movements against the newly created States, and their political leaders wanted to be prepared for any individual or concerted action that might be taken against them. As the distinguished Argentine statesman and jurist, Dr. E. S. Zeballos, declared:

> The heroes of American independence were actuated by a common feeling of continental brotherhood; they recognized the necessity of organizing sufficient

international strength to inspire respect and resist any attempt on the part of Europe to restore the old regime.[1]

Thus, at Panama, the principal and most significant agreement signed was the treaty of union, league, and confederation. By this treaty the signatory States formed a defensive and offensive alliance, and stipulated that the object of the compact was to maintain their sovereignty and independence against foreign subjection. Supplementary agreements reinforced the provisions of this treaty.

Again, at the Congress of Lima of 1847, the question of national safety was the dominant topic. The principal agreement reached at that gathering was a treaty of union and confederation, by which the contracting States agreed reciprocally to support their sovereignty and independence, and to maintain their territorial integrity.

Animated by the same considerations that influenced the convening of the Congress of 1847, the Governments of Chile, Ecuador, and Peru signed at Santiago on September 15, 1856, a treaty of league and confederation. Several months later a similar treaty was signed at Washington by the representatives of New Granada, Mexico, Guatemala, El Salvador, Costa Rica, Venezuela, and Peru. Both these agreements contemplated joint action for the mutual protection of the signatory States.

Threats to the territorial integrity and national security of several of the Republics were the reasons for convening the second Congress of Lima in 1864, and at that time there were concluded and signed two treaties, one of union and defensive alliance, the other for the maintenance of peace. By the treaty of alliance, the parties agreed to defend reciprocally their independence, sovereignty, and territorial integrity against any foreign aggression. In the treaty for the maintenance of peace, the signatory States obligated themselves to resort exclusively to pacific means for the settlement of their differences.

While these early inter-American conferences were called primarily to discuss ways and means of preserving the national security of the participating States, conclusions reached were not restricted wholly to agreements having that object in view. The program of the Lima Congress of 1847, for instance, was formulated on a much broader basis. In addition to the treaty of confederation, a treaty of commerce and navigation, a consular convention, and a postal treaty were also signed.

It is not the purpose of this article to examine in detail the action taken on these agreements, or the permanent results of these conferences, but merely to set forth the spirit that inspired them, and the conditions that influenced their convocation. It is true that most

[1] E. S. Zeballos, "Conferencias internacionales americanas, 1797-1910," Valencia, 1914, p. 8.

of the treaties failed of ratification. Many writers have inquired into and have sought to explain the failure of ratification after the agreements had once been signed. Dr. Alejandro Alvarez, distinguished international lawyer, of Chile, explains this circumstance as being due to "the enormous distances which separated the countries, the instability of the early governments, the exaggerated regional spirit of independence, boundary disputes, and civil wars; to these factors should be added, wars between nations." [2]

To these reasons, the Colombian statesman and jurist, Dr. J. M. Yepes, adds the following:

> We should add to these causes of failure the fact that in every instance the United States was ignored, for it was then, as it is today, the most powerful nation in America and the one with the greatest influence on the destiny of the continent. This exclusion, it must be recognized, was a great error. Pan Americanism should be based on the solidarity of all the American democracies, on the harmonizing of their interests, on the absence of irreconcilable antagonisms, on the judicial equality of all nations, on the identity of aspirations and international policies, and on the recognition of all as members of a single family of nations.[3]

Further in his study, Dr. Yepes makes this additional observation:

> All those congresses were conceived at times when a Spanish reconquest was feared; once the danger which had brought them into being had passed, no one gave a second thought to the necessity of convoking them until a new threat again united the American nations in the organization of their common defense; the enormous difficulty of communication between the nations of America made any meeting of their representatives in an international conference almost impossible; *esprit de suite* and perseverance were lacking, elements essential for the triumph of any human undertaking.[4]

Notwithstanding the failure of ratification of these early treaties, it would be erroneous to declare them, or the conferences which evolved them, fruitless. In these early agreements were incorporated advanced principles of international law, far ahead of the spirit of the day in which they were promulgated, and which the world as a whole only today is seeking to make generally applicable in international relations. Even though these treaties failed of ratification, the principles enunciated therein were generally applied by the signatory nations in their relations with one another.

Dr. Yepes, quoted above, has admirably summarized the contributions of these conferences, in the following paragraph:

> Yet it cannot be said that the accomplishment of the American congresses of this first epoch was wholly sterile. Great juridical principles which Europe had not yet recognized in its international relations were affirmed at them, and the bases of a true American solidarity laid. The principle of the equality of all nations before international law was put into practice, and the necessity of the cooperation of all for the defense of democratic institutions proclaimed; arbi-

[2] Alejandro Alvarez, "Le droit international américain," Paris, 1910, p. 60.
[3] J. M. Yepes, "El panamericanismo y el derecho internacional", Bogotá, 1930, p. 51.
[4] *Ibid.*, p. 62.

tration was adopted as the sole civilized and Christian means of resolving conflicts between nations; the humanization of war was recommended, and certain barbarous practices, at that time customary in other parts of the world, were condemned. Efforts were made to codify international law, such codification being the only means of making sure that the relations between States would develop in a spirit of justice and equity. In fine, at these congresses the political and juridical outline of the continent was boldly traced, and concrete formulas were presented for the solution of grave international problems which even today worry the greatest statesmen and diplomats of the world. The more the work of those congresses is analyzed, the greater the conviction becomes that they were presided over by the highest spirit of international cooperation and by profound wisdom, which might serve as guide and example for all assemblies of this nature. The Pan American conferences of the second epoch would have been fruitful if they had accomplished no more than the completion of projects which had been outlined earlier and which will go down in history as patent proof of the capacity and breadth of outlook of the men of America.[5]

The utility and the value of these early conferences is also emphasized by another distinguished Colombian statesman and diplomat, Dr. Francisco José Urrutia, who says:

It should be recognized, nevertheless, that the congresses and conferences whose history I have just outlined, as well as the pacts which were signed at them (even though the latter may not have been ratified), were undeniably beneficial, inasmuch as they contributed powerfully to the development and the final orientation of the foreign policy of the American States; they tightened remarkably the bonds between these States; and they inaugurated a series of traditions and precedents of the highest value in the political and juridical domain. Thus, when the first Pan American Conference met on October 2, 1889, the members recognized that the principles which were to guide them, both in their mutual relations and in their relations with other States throughout the world, had long been part of the conscience of the American nations. They have always proclaimed these same principles and upheld them afterwards, both in other Pan American congresses and in the great world congresses, such as the Hague Conference or the Assembly of the League of Nations. [6]

THE JURIDICAL CONGRESSES

The Congress of Lima of 1864 was the last of the series of so-called political conferences. Thereafter, the threat of reconquest was no longer manifest, and the independence of the several States was generally recognized. With the removal of this danger, the necessity of convening conferences to consider ways and means of defense also disappeared.

In the years following, and before the inauguration of the series of International Conferences of American States in 1889, several important conferences of a juridical character were held in South America. The first of these was the Juridical Congress of Lima of 1877, which was followed by the South American Congress at Montevideo in 1888–89. The purpose of these conferences was to simplify the prin-

[5] Yepes, *op. cit.*, p. 62.

[6] Francisco José Urrutia, "Le continent américain et le droit international", Paris, 1928.

ciples of private international law applicable in the countries of America.

As has already been stated, at the Lima Congress of 1877 representatives of Argentina, Bolivia, Chile, Costa Rica, Ecuador, Peru, and Venezuela were in attendance. The Government of the United States was also invited, but because of the fundamental difference in the basis of the law of that country and that of the Spanish American nations, and also because of the dual nature of the legislative system in the United States between the Federal and State Governments, the invitation was declined. For the latter reason, the Government of Colombia also considered it impracticable to participate in the congress, and although steps were taken to send a representative to Lima, Colombia did not actually take part in the meeting. Subsequently, the Governments of Guatemala and Uruguay adhered to the conclusions reached by the conference.

The congress of 1877 resulted in the negotiation and signing of a treaty to establish uniform rules in matters of private international law, as well as a convention on extradition.

The South American Congress of 1888 was also primarily a juridical gathering, and had among its delegates some of the outstanding jurists of the South American nations. The deliberations of the congress resulted in the signing of treaties on international civil law; international commercial law; international penal law; the international law of procedure; literary and artistic property; trade marks; and patents; and a convention on the practice of the liberal professions. Besides the foregoing instruments, an additional protocol was also signed, containing provisions of a general character.

Between the conferences of 1877 and 1888, a congress to commemorate the centenary of the birth of Bolívar met at Caracas in 1883. The first two gatherings were principally for the purpose of considering questions of private international law, while at the Bolivarian congress of Caracas a series of declarations on public international law were signed.

THE INTERNATIONAL CONFERENCES OF AMERICAN STATES

Beginning with 1889, the conferences between the American Republics assumed a continental character, embracing all the independent nations of the Western Hemisphere. Whereas the earlier international American conferences had usually been restricted as to the subjects discussed, beginning with the First International Conference of American States the programs were much broader in scope. The conferences were primarily economic in character, but they encompassed in their programs topics of a juridical and political nature, particularly insofar as questions of arbitration and conciliation were concerned, as well as economic subjects. An examination of the

programs of the six conferences thus far held, as well as the program of the forthcoming Seventh Conference, will reveal the great variety of subjects treated, embracing commercial, financial, industrial, and other economic questions; intellectual and cultural relations between the American Republics; public health and social welfare; arbitration and conciliation; the codification of international law, etc.

In discussing the evolution of these conferences, it may be said that their growth and development represent in a sense the evolution of the participating States themselves. Made up as they are of sovereign States, the conferences reflect, as in a mirror, the point of view or the development of the component parts of the conferences. Considered from this angle, the programs of the conferences necessarily repeat topics considered at preceding gatherings. This does not mean, however, that each conference is merely a fruitless repetition of the discussions had at its predecessors. Unfortunately, this is the attitude frequently adopted by critics of the International Conferences of American States, based probably on a mere superficial examination of the topics of the programs. A more careful inquiry into the results of the conferences would show the fallacy of this conclusion; it would reveal that as the position and point of view of the participating States change and evolve, so also do the International Conferences of American States; and that the action of a later conference on a particular subject constitutes a step in advance of that taken previously on the same subject, or represents an attempt to find a formula acceptable to all or to a majority of the States.

As between the participating States and the International Conferences, it is useless to expect that the one may proceed faster than the other in its evolutionary process. But each may, and undoubtedly does, contribute to the development of the other. By acting as a sounding board, so to speak, of continental opinion, the conferences and their discussions necessarily affect the viewpoint and attitude of the individual member States. Similarly, the conferences give direction and point the way along which the twenty-one nations are prepared to go; that is, they consolidate, in a continental sense, the action which each nation is prepared to take individually.

This relationship of the conferences to the States has been strikingly revealed in the consideration of the subject of arbitration and conciliation at successive International Conferences of American States. Beginning with that of 1889, the subject of the peaceful settlement of international controversies has been a major topic before most of these international conferences; but until the last few years no satisfactory agreement, acceptable to all the States, could be evolved. And this was merely because it was not compatible with the interests of all the States to enter into agreements of that character. But once the obstacles impeding the negotiation of such agreements had been

removed, and the viewpoints of the individual States had evolved to the point where it was considered that the national interests would be served by such agreements, treaties embodying advanced principles of arbitration and conciliation were signed. This was accomplished at Washington in January 1929, at the International Conference of American States on Conciliation and Arbitration. Dr. Ricardo J. Alfaro, former President of Panama and distinguished international lawyer and authority, has succinctly traced the progress of this subject through succeeding international American conferences, in the following words:

> The first conference, held at Washington in 1889, animated by a spirit of noble enthusiasm for the cause of obligatory arbitration, confined itself to recommending the adoption of this civilized and beneficent principle. In the following conferences there was encountered in respect to compulsory arbitration either a spirit of lukewarmness or one of frank resistance, and these conferences could never get beyond words, optatives, and recommendations. The Sixth Conference emerged from this unfertile field when it declared solemnly, not that it recommended, but that it adopted compulsory arbitration as a means of resolving international differences between American States, and arranged for the holding in Washington of a special conference with the object of formulating a multilateral treaty carrying this principle into effect.[7]

A similar evolutionary process may be witnessed in the case of other topics that have several times appeared on the programs of the International Conferences. Thus, proposals to undertake the work of codification of international law were advanced as early as the Second Conference of 1902 at Mexico City, and although a convention was signed it was never carried into effect. In 1906, at the conference at Rio de Janeiro, another convention was signed creating an International Commission of Jurists. The commission did not meet, however, until 1912, and the intervening World War interrupted the program of work which the commission had laid out for itself. With the resumption of the International Conferences at Santiago, in 1923, plans were again laid for the codification of American international law. The outcome was a reorganization of the International Commission of Jurists, provided for in the 1906 convention. This commission met at Rio de Janeiro in 1927, and prepared a number of projects which were submitted to the Sixth Conference at Habana in 1928. The result was the adoption and incorporation into the form of conventions of seven agreements, relating to the status of aliens, treaties, diplomatic officers, consular agents, maritime neutrality, asylum, and the rights and duties of States in the event of civil strife. At the same time the conference signed the Code of Private International Law, also submitted by the International Commission of Jurists, and which had been originally drafted by the eminent Cuban

[7] "Current History", New York, February 1929, p. 824.

jurist, Dr. Antonio S. de Bustamante. But the task of codification is a large one, and the subject will undoubtedly appear on many future programs. Thus, one entire chapter of the agenda of the forthcoming Montevideo Conference is devoted to the problems of international law.

As stated at the outset of this section, topics of an economic character have predominated on the agenda of the International Conferences. Among these have been such matters as trade-mark protection and the protection of industrial and intellectual property. A review of the action taken on these subjects at the successive conferences serves to emphasize the difficulty of finding a satisfactory formula, one that will meet with the approval of all the participating States. At the Mexico City Conference of 1901–2, two conventions were signed, one on copyright, the other on patents and trade marks. Five years later, in 1906, it was sought to consolidate these agreements into a single convention, embracing patents, copyright, and trade-mark protection; but at the Fourth Conference of 1910 this consolidation was found to be impracticable, and accordingly three separate conventions were signed on trade-mark protection, copyright, and patents. Although the 1910 convention on trade marks was ratified by all but six of the countries represented at the conference, the agreement was subsequently denounced by several States because it was found that it operated unfavorably in some respects. A revision was attempted at Santiago in 1923, but no really satisfactory convention on trade-mark and commercial protection was negotiated until 1929, when the Pan American Trade-Mark Conference met at the Pan American Union. This conference was made up of technical experts, who made a thorough study of the problem and formulated an instrument which it is believed adequately covers every phase of the subject.

In the field of transportation, the successive conferences have given consideration to the various forms of communication, and have reached conclusions seeking to facilitate and regulate international transportation among the republics of the American Continent. Thus, at the First Conference of 1889 a recommendation was adopted and carried into effect providing for an Intercontinental Railway Commission to survey a route for a railway extending from the United States in the north to Argentina in the south. The report of this Commission is a comprehensive survey of the territory that would be traversed by such a line, and although such a railway has never been constructed in its entirety, the report has been a source of information in the surveying and construction of lines of communication. With the expansion of automotive transportation, the subject of highway communication facilities has appeared on the program

of Pan American conferences. These discussions have without doubt stimulated and given direction to the construction of facilities for this new means of transportation. The recently completed survey of an Inter-American Highway through the Republics of Central America is a consequence of the action taken at Pan American conferences. At the same time, provision has already been made for the regulation of international automotive traffic on the American Continent, by virtue of a convention signed at the Pan American Union in 1930. Similarly, and with respect to the most recent and fastest form of transportation, namely, by air, the Republics of the American Continent have negotiated and signed a convention on commercial aviation on the basis of a draft previously drawn up by an international commission of experts.

As indicative of the broad scope of the International Conferences of American States, reference may be made to the consideration that has been given to intellectual questions and to the development of closer cultural ties between the republics of the American Continent. Agreements on the exchange of official, scientific, literary, and industrial publications and on the exercise of the liberal professions were signed as early as the Second Conference of 1902, but it is only within recent years that activity in this direction has been stimulated and emphasized, culminating in the creation at the Sixth Conference in 1928 of an Inter-American Institute of Geography and History and of an Inter-American Institute of Intellectual Cooperation, with headquarters at Mexico City and Habana, respectively.

Obviously, it is not possible within the confines of this article to trace the development of every subject considered at the International Conferences of American States. The foregoing are cited merely as examples of the evolutionary process through which the subjects treated at these conferences pass, to show that as times and conditions change, and the point of view of the participating governments alters, so also do the results of the conferences. In addition to the subjects mentioned above, many others could be given, including customs procedure, consular procedure, cooperation in monetary and financial matters, public health and sanitation, agricultural cooperation, etc. On many of these, important agreements have been reached and conclusions been put into effect which undoubtedly have proved to be of immense benefit to all the nations of the Western Hemisphere; on others, progress has been slower, owing to the variety of interests involved and the difficulty of finding a formula acceptable to all. But all of these subjects are receiving constant attention and study; they have appeared on the programs of previous conferences, and will without doubt be the subject of consideration at future inter-American gatherings.

A feature of the conference movement on the American Continent in recent years has been the large number of special or technical gatherings, supplementary to the International Conferences of American States. Several of these specialized conferences may be traced back over a period of years, particularly the Pan American Sanitary Conferences, the Pan American Scientific Congresses, and the Pan American Commercial Conferences. Since the Fifth International Conference of American States of 1923, however, such special or technical meetings have increased greatly in number, and the subjects which they have been called upon to consider cover virtually every phase of inter-American activity. Generally they are called to consider a particular topic, or a group of related topics, and by concentrating on one subject the delegates are in a more advantageous position to give to the matter the careful study and detailed consideration which it merits. Some of the most important accomplishments of the last few years have been achieved at these special or technical conferences. Thus, the advanced treaties on arbitration and conciliation, signed in 1929, were negotiated at the specialized International Conference of American States on Arbitration and Conciliation; the most recent trade-mark convention was drawn up by a technical commission of trade-mark experts in 1929; the Pan American Convention on Commercial Aviation was drafted by a commission of aviation experts and made the basis of discussion at the Sixth International Conference of American States in 1928; and, likewise, the Inter-American Convention on the Regulation of Automotive Traffic was drawn up and signed in 1930 by a group of automotive and highway engineers. In anticipation of the Seventh International Conference of American States at Montevideo, a number of specialized groups are engaged in preparing projects on certain topics of the agenda which will be submitted to the delegates as a basis for discussion.

Finally, the evolution of the international American conferences since 1889 may be traced through the growth and expansion of the Pan American Union, the institution which serves as the permanent organ of the conferences and of the union of American Republics. Dr. Yepes, in his book previously quoted from, ascribes as a reason for the lack of permanent results of the earlier inter-American conferences, the fact that "No organ of communication had been created to serve as the motive force of all activities."[8] The Pan American Union serves as such an organ for the Pan American movement initiated in 1889. Conceived originally as a commercial bureau for the collection and dissemination of statistics and information on the commerce of the American nations, the scope of the institution has

[8] J. M. Yepes, *op. cit.*, p. 62.

grown with each succeeding International Conference. Today, on its official side, the Pan American Union prepares the program and regulations of the International Conferences of American States, keeps their records and archives, and assists in securing ratification of the treaties and conventions and action on the resolutions adopted at the conferences. In its unofficial capacity, the Union serves as a center of information on every phase of inter-American activity, whether it be commercial, financial, industrial, agricultural, or whether it relate to intellectual and cultural matters. The Pan American Union is the outward manifestation of a living and growing movement of approximation of a group of States in an important region of the world. As these States evolve and develop, so also will the Pan American movement, and with it the institution that serves as the organ of this union of American States.

SOME LESSER KNOWN COMMODITIES OF COMMERCE

By William A. Reid
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TO THE stranger traveling through Paraguay one of the surprising sights is the vast number of wild orange trees. Oranges lie piled in orchards; there are corrals of oranges along trails awaiting shipment; ox-carts are bearing oranges to market; at frequent intervals the international trains for Buenos Aires carry nothing but tons of oranges. Paraguay is truly a fruitful land in this universally popular fruit. And Paraguay has two varieties of the orange: the edible and the inedible. Both classes serve mankind.

Years ago a botanist who sought orange-blossom nectar for cosmetic manufacturers of France found Paraguay a fertile field. But the work of gathering blossoms proved a stupendous task. Perhaps leaves as well as blossoms, reasoned the botanist, might afford the desired material. So he began experimenting; in the end, leaves were found to be about as valuable as blossoms and they were far more plentiful. Thus was laid the groundwork of an important Paraguayan industry of today — the production of oil of petit-grain. This unusual industry is little known beyond the bounds of Paraguay, but the producers send to the world in normal times about 80 tons of oil annually. It is a product that forms the basis of many soaps and perfumes for the boudoir, and it also enters into the manufacture of flavoring extracts which are sold throughout the world.

The traveler over Paraguay's north-south railway may decide to stop off at Villa Rica, the second city of the republic in size. This place of 30,000 people stands a hundred miles southeast of Asunción, the capital. The name itself means a rich city; forest and fertile agricultural lands extend for hundreds of miles in all directions. Villa Rica is one of the world's outpost cities, and all kinds of raw materials come mostly by trails to its market places.

Here he can hire saddle horses and proceed into vast and virgin solitudes. Now and again he passes thatched roofed huts, then perchance he comes near a home of some well-to-do *estanciero*. Further along the trail he sees smoke, just a tiny stream rising from a thatched roofed shanty. The guide tells him this is a still (but not an illicit distillery). Paraguay has many of these stills and in season they are quite busy. He dismounts at one of them and is received by the owner and his friends with some degree of curiosity. The natives,

A BRANCH OF A BITTER-ORANGE TREE.

Paraguay, a land of orange trees, has for many years been the world's chief source of oil of petit-grain, a distillation from the leaves of the bitter-orange which forms the base of innumerable soaps, perfumes, and extracts.

after convincing themselves that the stranger means no harm, appear really glad to see him. They invite him into the stillhouse. There is a large covered vat connected with copper coils and pipes; smoke issues from fagots of burning wood under the vat. The latter is filled with steaming-hot orange leaves—oil of petit-grain is in process of manufacture. Some of the workers are bringing in the leaves, which have come from far and near. But these leaves are not from the tree producing the edible orange; they have been plucked from the bitter-orange tree, an entirely different variety. The owner of the place is producing from the land roundabout something the world wants.

Some of Paraguay's larger distilleries are located in the villages of Yuguarón, Itá, Itacuraby, and Nemby, all in the region of which Villa Rica is the distributing center. Broadly speaking, it requires from 500 to 600 pounds of leaves to produce a quart of oil, and the output of the smaller stills is only 4 or 5 quarts per day. Yet these diminutive establishments and some larger ones enable the Paraguayan exporters to ship abroad the 80 tons of oil a year; this amount is said to meet approximately 70 percent of the world's demand for this product of the wilds. Most of the output of these country stills is sent to Asunción, where the oil is further refined and prepared for shipment to foreign countries. France is the leading customer, followed in order by the Netherlands and the United States.

New articles are being displayed in our shops and department stores. They are made from a certain material which can be traced to the dairy herds on the Argentine pampas; it is known as casein and is a by-product of the dairy industry.

Let us examine one of these novelties, a pencil; it has gold tips, but the 3 inches between them is of semitransparent substance resembling amber. It is not amber, but pure casein which has received chemical treatment. It is so hard that a knife will not cut it, while its color and luster are decidedly attractive. Another casein article is the paperweight, in the form of cubes, rectangular blocks, or figures of animals, in red, yellow or green, all semitransparent. Other articles produced from casein are umbrella and parasol handles, book racks, cuff buttons, handles for blotting pads. Indeed, a well-known manufacturing company of the United States is finding a constantly increasing number of articles that can be made from the Argentine product.

Casein is a proteid substance found in both the animal and vegetable kingdoms. Its chief animal source is milk, for the main part of the curd consists of casein. This is dried and shipped in bags.

In normal years, Argentina sends to manufacturing nations of the world about 20,000 tons of casein. United States importers buy 60 to 70 percent of this output. The dairy business of Argentina has made rapid strides and today butter and cheese are manufactured in large quantities and shipped to European countries. Casein, a residue from the milk, is becoming more and more important as an article of export, and in particular demand in the United States, England, Germany, and France. Casein not only enters into the manufacture of numerous novelty articles, but finds its way into paints, wall paper, and a score of things of general utility.

How much carnauba wax can be bought for $2,500,000? That enormous figure represents the value of the 6,714 tons of this peculiar

A GROVE OF CARNAUBA PALMS.

This palm, which grows wild over large areas of Brazil, provides for many domestic wants, besides supplying the carnauba wax of commerce, which is utilized by various manufacturing industries.

wax that Brazil exported to the world in a recent year. And most of this product comes from one of Brazil's smaller States, Ceará. Although the demand for wax is not so heavy every year, business runs into a value of a million or so dollars annually; yet comparatively few people outside the trade know what carnauba wax is, whence it comes, or what its uses are.

In the first place, this wax has been characterized as "one of the most curious products of nature." The *copernicia cerifera*, from which it is derived, grows wild over Ceará, Rio Grande do Norte, Parahyba, Piauhy, and other States of northeastern Brazil. It is a straight tree belonging to the palm family, and attains a height of 50 or 60 feet; it has a smooth trunk, the leaves growing in a bushy cluster at the top. The carnauba palm is a wonderful provider for man: the heart, extracted, is used as a vegetable known as *palmito;* the stems of the leaves are used in making excellent fishing nets; and the trunk supplies lumber for fences, corrals, and other purposes. The tree also supplies material for hats, bags, brooms, and mattings. But far more valuable is the wax obtained from the large long leaves which are plucked from September to March. Those collected about the middle of January usually have the richest wax content. Men climb the trees and with long pruning knives affixed to poles cut certain leaves which drop to the ground. Then they are laid in the sun for 2 or 3 days, and, when dry, deposited in storage houses. After a few weeks a whitish dust has collected over them; by "whipping" the leaves it is made to fall on the smooth and tightly laid floor. The dust is then collected by hand and placed in tanks of boiling water for about 20 minutes; the wax gathers on top of the water and is removed, strained, and dried. The result is a yellow, hard, vitreous substance carnauba wax.

Of what use is this wax? All over northern Brazil it forms the basis of candle-making. In Europe and the United States it is used in the manufacture of phonograph records, shoe polish, floor polish, pomades, and other household necessities. In the electrical industry this same substance is made into insulators, a use which consumes vast quantities of the raw material annually. As a substitute for resin we also find carnauba wax answering the call of a multitude of everyday demands.

Back in 1769 a product with a curious name, divi-divi, was shipped from Venezuela to Spain. From that date on, the article assumed more and more importance to European manufacturers, who made use of it in tanning hides and coloring leather.

For years the importers of the United States have been buying divi-divi from tropical American countries, where it also occupies an important place in leather manufacturing. When the Great War

Courtesy of United States Department of Agriculture.

LEAF AND PODS OF THE DIVI-DIVI.

Both the pods and the tannin derived from them are among the exports of Venezuela, Colombia, and the Dominican Republic.

broke out, the price of divi-divi rose almost overnight to enormous figures. By 1919, the importation into the United States had increased to 90 times that of 1913. In more recent years millions of pounds have come to the United States annually. The wholesale cost has ranged around a few cents per pound.

What is divi-divi? The word appears to have originated in the Caribbean countries, probably in Venezuela, whence the first European shipments were made. Botanists know it as *Caesalpinia coriaria*. The tree grows to a height of 30 feet and is said to bear for 100 years; it produces pods 2 to 3 inches long. From them is obtained tannin that is astringent, oily, and mucilaginous; the tannin content usually ranges from 40 to 45 percent.

Venezuela is the most important source of divi-divi, although Colombia, the Dominican Republic, and various other countries of the American tropics could supply large quantities of this product. Venezuela's exports range from about 1,500 to more than 11,000 tons annually; the supply is plentiful and this output could be increased if the demand warranted. Some years ago, in order to economize on ocean-freight charges, two extracting plants were established in Venezuela, one at La Guaira and the other at Porlamar. At both plants an extract containing 80 percent tannic acid and 16 percent tannic glucose is obtained by a patent process and pressed into cakes for the export trade.

In Argentina capitalists have invested some $75,000,000 in 23 factories, which are producing quebracho extract on a gigantic scale.

This product is obtained from a peculiar tree growing largely in northern Argentina and in Paraguay. The extract from its wood is used for tanning leather. In the United States, the supply of tanning barks is becoming exhausted; such materials must be imported. This Argentine product reaches our tanneries mostly as extract, for it is cheaper to purchase this than to pay freight on whole quebracho logs.

The work of felling the giant trees is a herculean task, as their wood is extremely hard; gangs of laborers equipped with modern appliances do this work. After a tree has been felled, the axmen remove the bark and the sappy outer surface, leaving the extremely red heartwood. The latter holds from 20 to 25 percent of tannin.

Tractors in certain instances are now replacing ox-teams in transporting the logs from the forest to the *aserrineras* or mills where they are reduced to chips or coarse sawdust. In one or the other of these forms the material passes to giant "diffusers", which extract the tannin by means of water and steam under high pressure. Six to eight treatments are usually sufficient to exhaust the tannin properties of the wood; then the liquid is drawn off into evaporators which remove much of the water content.

Many of the mills are extensive and represent vast outlays of capital. In every case, machinery from Europe and the United States makes up much of the equipment.

A series of processes is necessary before the extract is ready to be placed in bags. These are closed by use of coarse twine and moved away to "set" or cool for a day or two. Quebracho in this form looks somewhat like hardened glue. It is of a brown color and, like glue, may be broken into fragments. United States importers buy in normal years $16,000,000 to $17,000,000 worth of quebracho extract from Argentine producers.

A QUEBRACHO EXTRACT PLANT.

In Argentina alone there are 23 factories for the extracting of tannin from quebracho logs.

Quebracho timber has another valuable use, for railway ties. For this purpose it is unrivaled, for it lasts from 20 to 30 years. Its density is so great that moisture is excluded, and its tannin properties are said to act as a preservative. A cubic foot of this wood weighs between 79 and 85 pounds, while logs cut in the forest range in weight from 8 to 11 tons.

Did sick goats direct man's attention to the utilization of a useless plant? In northern Mexico one sees vast stretches of arid land dotted with picturesque cacti. There also flourishes the small guayule bush. Several decades ago, as goats were foraging over this dry area, some of the animals ate guayule leaves. They became sick or died, and veterinarians who examined their stomachs found therein certain indigestible substances. The hungry goats had died from the rubber properties contained in the guayule plant.

Dr. Adolfo Marx of Mexico is credited with the discovery of the commercial value of the shrub; after further experiments he erected in 1903 a small plant at Saltillo and began extracting rubber from guayule. Several years, however, elapsed before the trade would concede the value of this class of rubber, although now some authorities on rubber tires claim that, if 10 to 15 percent of guayule is added to plantation tree rubber in the manufacture of motor tires, they will give far greater mileage. Today, the production of guayule in Mexico and elsewhere is enormous.

A plot of Irish potatoes and a plot of guayule plants look somewhat alike. But the guayule grows more slowly, requiring 3 or 4 years to mature. It reaches a height of about 3 feet and spreads over several feet of ground; one of its peculiarities is that it thrives in poor and dry land.

When ready for harvesting the plant and its roots are pulled from the earth and placed in piles. Then they are gathered, baled, and hauled to the factory, where the bush and roots are crushed or ground. Running water carries the mash to settling vats, where the process of separating the rubber globules from the other matter is not difficult.

Some lands yield a ton or two of guayule bushes per acre and when the price of rubber is fair the planter receives a satisfactory income from his labors. His initial expense for land may be as low as 10 or 20 cents an acre. About 20 years ago the price of a ton of guayule rose to the enormous figure of $150; some time later, however, the same amount brought only $8, then a profitless crop.

Hot days call for cool beverages. Everywhere in the United States soda fountains, restaurants, and road refreshment stands are passing millions of drinks to millions of thirsty people. And among the new beverages is Matteen, a product derived from the leaf of the maté tree that grows wild in Brazil and Paraguay.

A CULTIVATED FIELD OF GUAYULE.

Since the discovery of the rubber content of guayule, which grows wild in the arid lands of northern Mexico, the plant has been cultivated, and large areas are now devoted to its production.

Ten millions of people in South America, it is estimated, are constant users of the beverage, yerba maté. But to many people in the United States the drink is either unknown or not liked. Now comes the food chemist, who, taking dry maté leaves as a basis, prepares a delicious summer beverage. He removes the bitter tang, which few Americans enjoy, adds certain well-liked ingredients, and combines them with the life-giving properties of the natural maté leaf, and the result is Matteen. This beverage, originally placed on the market in New Jersey, has under other names extended its sale to various States. In Texas the new drink has been found so pleasant that the original company operating there has expanded its activities by opening additional bottling establishments.

Down in Brazil and Paraguay, where yerba maté not only grows wild but also is being cultivated, it is interesting to observe operations. From a small settlement the natives go out to the plantation or to the maté jungle in squads of 3, 4, or 6. These *yerbateros* usually carry small axes or hatchets, some provisions, and water. If they are collecting wild maté it is possible that they may find the trees in clumps, but often the trees are so scarce that only a few can be found on an acre of land. Much, therefore, depends upon the ability of the gatherers to find the most abundant supply of trees. Of course, the smaller the tree, the easier it is to cut or pluck the leaves. A tree 12 feet high may make the gatherer climb about among its limbs in order to cut the best branches.

Where there is a supply of trees, it is likely that a camp will be built nearby. So, while some men are collecting leaves and twigs, others are making a *tatacua*. The latter is a plot of ground, say about 6 feet square, which is cleared and pounded until quite firm. Stakes are driven at corners and edges, and logs of wood piled smoothly over the hard surface. As the returning gatherers arrive with maté branches upon their backs and heads, they throw their loads upon the logs, which, in due time, are set on fire. This fire dries or scorches the leaves making the labor of stripping them from the branches less difficult. The withered leaves are collected in homemade nets and carried to what is known as the *barbacuá*. This is a sort of platform a few feet above the ground, with crosspieces placed closely enough together to hold the leaves. A hot fire is kindled underneath, while a few workers armed with poles keep the leaves stirred and prevent their ignition. This curing process may last for a day and a night. At the end of the curing the burnt wood and ashes are drawn aside, the ground is well pounded, and then the leaves are passed between the supports to the earth. This out-of-date method of catching the leaves on the ground is being superseded, however, by placing boards of hewn sticks close together on the

Courtesy of C. R. Cameron.

YERBA MATÉ.

Yerba maté, the beverage so extensively used throughout a large section of South America, is brewed from maté leaves properly toasted, dried, and aged. Upper: Toasting the maté. The large branches are held by the operator over the fire until the leaves are uniformly toasted. Lower: Weighing a sheaf of maté. After the toasting process, the smaller leaf-bearing twigs are broken off, gathered into sheaves for weighing, and moved to the *barbacuá* for drying.

earth. Then the dried leaves are pounded into small chaff-like particles for packing into bags, each of which when filled weighs about 200 pounds.

Latest but not least, a new product for use of the human family comes from the shark of tropical waters shark-liver oil. From recent experiments conducted by scientists it has been shown that this oil is extremely rich in vitamins A and D and that, if taken in concentrated form, it has a much higher therapeutic value than cod-liver oil. Sharks are of various sizes, of course, and the amount of oil that is procurable from their livers doubtless varies greatly. An average-size shark liver is said to yield about 2.5 gallons of oil; some have been found much richer in oil content.

Those who have participated in the exciting sport of fishing for sharks off the coast of Yucatán and off the Pacific coast of Costa Rica realize that those particular waters seem to be the rendezvous of vast numbers of the shark family. In clear water they can be counted by hundreds. These areas and other similarly infested waters would seem to offer pleasing rewards for those equipped to catch this species of huge fish.

A few years ago a concession for shark-fishing off the coasts of Guatemala and Honduras was granted to an American, but he died before his organization was completed. In that instance, however, the company proposed to utilize the teeth, skin and other parts of the shark for commercial purposes, for the scientific investigations above mentioned had not then been made.

The foregoing commodities of commerce, which are not generally well known, are but a few of the raw materials from Latin America that are emerging from obscurity into greater usefulness. One of the agencies that is bringing them to the front is research; and research today is working wonders. For instance, the results of certain contests recently held in the Far East have a direct bearing on one of the oldest products of the Americas—rubber.

Officials in charge of government experimental work in Java offered prizes for suggestions of new uses to which rubber could be placed. In the prize-winning papers one contestant demonstrated that rubber latex may be successfully used for veneering in the manufacturing of furniture; another offered the suggestion that rubber be utilized in trunk and other baggage manufactures; still other showed that derivatives of latex can be utilized in making hand and shaving soaps and in scouring compounds.

While these possible new outlets for rubber are still in experimental stages, the Dutch authorities who conducted the contest are pleased with the awakened interest and will conduct further researches as to the practicability and cost of various uses brought to light by the prize contestants.

Courtesy of the Hispanic Society of America.

"LANCES AND GUITARS" BY CESÁREO BERNALDO DE QUIROS

In this painting, one of the splendid canvases of gaucho life in the Province of Entre Rios, 1850-1870, the artist has pictured the meeting of a group of Gauchos of two opposing political parties in a *pulperia* for a contest on the guitar.

A FEW WORDS ON ARGENTINE MUSIC

By C. J. Videla-Rivero

FOUR hundred and seventeen years ago Juan Díaz de Solís, Admiral of the Spanish King's fleets, brought a tiny caravel squadron down the east coast of South America, in quest of a passage to the fabulous land of the spices.

He was surprised one morning to find that the sea water suddenly had become drinkable that it was not salty, but fresh. This strange body of water he named Fresh-Water Sea—*Mar Dulce*. Impelled by curiosity, the admiral decided to investigate what manner of people inhabited the shores of this odd country. That curiosity was his undoing, for as soon as he landed the savage Charrúa Indians fell upon his party, killing him and several companions, and driving the survivors to the water. But the Indian triumph was ephemeral. Spanish soldiers came again to the River Plate, and despite untold hardships succeeded in founding cities and settling the land that is today the Argentine Republic.

Some time after the Spaniards had established themselves in this new country the guitar, their national instrument, appeared in the towns and on the plains, and songs that bore some resemblance to the airs of the peninsula began to be heard. This fact might lead one to think that Argentine music is of Spanish origin. That would be logical, but untrue. The predominant ingredient in Argentine music is of Negro origin.

Fiery epithets could be showered upon the chapter of the history of the Americas dealing with the importation of Negroes. But to those whose sentimentality has become more or less calloused by reading of the numberless subjugations of one race by another, it will be sufficient to say that the Negroes were the living answer to the all-important problem of labor supply. After the conquerors had purloined the last remaining pieces of gold and silver in the Indians' possession, it became necessary to extract the metals from the earth, and to till the land for sustenance—in other words, to work.

To perform this task, the Negroes were shipped across the ocean. Most of those who were brought to Buenos Aires became domestic servants or something akin to it. Their masters were not harsh: Once the pots and pans were clean, the horses washed, and the carriages polished, they were at liberty to gather in some vacant lot and carry on a little social life.

There, plaintive guttural sounds blended into incomprehensible songs, accompanied by the rhythmic beating of drums. Arms were raised to heaven, as if in supplication or perhaps in threat, and the earth was soundly pounded by the bare feet of the slaves, who wanted to punish it for harboring the trader and the master.

While the Negroes thus gave vent to their lamentations, the Gauchos roamed the surrounding plains. Silent, sad, tragic, their souls were longing for a means of expression that could describe their secret sorrows.

Nobody knows when or where a Gaucho heard a Negro sing for the first time, but the impression it made upon him was profound. That song had opened to him the gates of a new world; his soul had at last found its means of expression. The plaintiveness of the Negro found an echo in the sadness of the Gaucho—and thus Argentine music was born.

Unlike other folk music, which is usually transmuted into song, Argentine music has taken a plastic form. It is fundamentally dance music.

The fandango was the first materialization of the Negro-Gaucho psychological crossing. Some authors, prone to jump to conclusions, want to attribute a Spanish origin to the fandango, due to certain similarity of rhythm with the Andalusian bolero. But if any outside influence is to be reckoned with in an analysis of the fandango's genealogical tree, such influence is rather Moorish, and was brought to the River Plate by the Portuguese. The Negroes then injected it into their own rhythm, and the fandango thus came out full-fledged, losing no time in invading the outlying sections. From the rural districts it stole into the social affairs of the city's lower classes and, encouraged by the warm reception it got in the back yards, stealthily made its way to the middle-class homes, where it was danced behind drawn blinds. It was all ready to assault the drawing rooms of the aristocracy when Juan José Peralta, archbishop of Buenos Aires, dealt it a death blow. Under pain of excommunication for those who dared to disobey, the archbishop banned the fandango on July 30, 1743.

The *malambo*, the next invented, was more fortunate because it was, perhaps, more diplomatic. It decided to remain a country dance, leaving drawing rooms alone, and thus it did not incur any archiepiscopal fulmination. Here the Negro influence is clearly apparent. The *malambo* music is jumpy, nervous, contagious. It has rythmic beatings that immediately betray the part that the tom-tom, or its spirit, played in creating it.

The *malambo* is exclusively a masculine dance. One Gaucho taps, kicks, crosses his legs, pounds the earth with the side of his feet, make his spurs tinkle, and fills the air with a thousand and one different figures while his opponent, crouched, watches him. When

the guitars cease playing, the dancer stops and takes his turn at crouching and watching.

Encouraged by the success attending the *malambo*, the Gaucho proceeded to create new dances, and it became more and more noticeable that in the process of such creation he was declaring his independence from outside influences. Such a trend is clearly shown by the *gato*.

This dance demonstrates to what extent the Gaucho was a close observer of nature, and what a fine sense of melody he possessed. The music, in 6-8 time, has two distinct parts: one is purely melodic,

A GAUCHO OF THE PAST CENTURY.

The creator of the musical idiom of Argentina was the Gaucho, that picturesque descendant of the early Spanish colonists who led a semi-nomadic life on the great pampas. The guitar provided the musical accompaniment for his plaintive melodies.

From a drawing by Hohmann in "La Prensa", Buenos Aires.

and supplies the material for the song and figures of the dance; the other is rather imitative, and supplies the quick beating that guides the dancers in their sudden foot-tapping. The first part was, to the Gaucho's mind, the role of a bird fleeing from its assailant, and the second represented the steady footfall of the pursuer running after his prey. The music is stopped every once in a while to let the male dancers address a *relación* (compliment in verse) to their female partners, who return it in kind.

Not all the Gaucho dances were such peaceful exponents of bucolic exuberance as the *gato*. There was the *güella*, for instance, which incarnated all the bloodthirstiness that the wars of independence

From "Caras y Caretas."

DANCING THE "GATO."

Created by the gaucho, the gato is now one of the regional dances of Argentina. In the hills and valleys of Catamarca practically everyone is adept in this graceful dance, which in most instances is learned in childhood.

and the later civil strife had awakened. It was a painful tune, tragic, almost macabre. It seemed a sudden burst of laughter of madmen. The *güella* was the dance of the executioners of the men who bent over the prostrate form of their victim, pulled his head back and with a few swift strokes of the knife across the throat put an end to his life. Women refused to dance the *güella*. When the civil wars ended, the *güella* vanished along with other sad reminders of 20 years of nightmare.

The *güella* left behind some of its liveliness, and this mixed spontaneously with the gracefulness of the *gato* to form the great national dance of Argentina (and of Uruguay)—the *pericón*.

Nobody invented it; it came into being by itself, anonymously and unannounced.

The *pericón*, with a lively music in 3-4 time, is a charming dance. It is a group affair, requiring several couples which swirl, run, separate, and come together again, holding in their hands blue and

white kerchiefs that, united, form the national flag. The *pericón* still lives in Argentina and Uruguay, sister countries that were once a single unit, and that spiritually still continue to be one, although living politically apart.

The *cielito* (little heaven) was another equally charming dance whose music is still heard in Uruguay and in the Argentine Province of Entre Ríos. Its creator was Bartolomé Hidalgo, perhaps the first Gaucho poet that lived on the shores of the River Plate. Hidalgo was an Uruguayan possessed of a romantic and artistic spirit. In Montevideo, where he lived, he composed Gaucho poems simple poems, distilling the sadness of the Gaucho soul, for which he composed his own music. The result was the *cielito*, a sweet strain that awoke in its hearers an irresistible impulse to dance.

From Montevideo the *cielito* crossed over to Buenos Aires, where it was at first danced in Negro gatherings. But it was too subtle, too delicate, too beautiful to remain there. It soon found a place in higher environments, where people perceived in it a virgin, artistic, onomatopœic beauty. But the *cielito*, as a dance, was too subtle to resist the advances of modernity. It still survives as music, however, and its charm has not lost any of its lure through the years.

The *zamba*, another Gaucho dance in 6-8 time, is today a companion to the *gato*. Both have a certain nervousness, that is somewhat subdued in the *zamba*.

The waltz also invaded the Argentine plains, but it suffered at the hands of the Gaucho certain alterations that gave it an individual flavor. This modification has led the waltz astray and engendered a new dance, the *ranchera*, in 3-4 time, which may be said to be a mixture of the waltz and the *zamba*.

Other native melodies sprang up in the north, during the latter half of the last century, that are either onomatopœic in nature, or derive from other music imported into the region. Such, for instance, is the *chacarera*, in 3-4 time, and the *chacayalera*, a variation of the former.

Two typical melodies still heard differ from the above-mentioned in that they are only sung and not danced- the *vidalita* and the *estilo*, both in 6-8 time. The former, a sweet musical lament, has four verses, with the word *vidalita*, which really has no exact meaning but reflects the mood of the singer, interpolated between every two lines. The latter has 10 verses.

The last place in this brief sketch of Argentine music must be given to the Argentine tango, about which Waldo Frank and Philip Guedalla have written brilliant comments.

The tango does not truly deserve a place in a history of Argentine music it rather forces itself upon the writer. Like the fandango, it was born in the slums, and sung and danced by the underworld; it

was fortunate, however, in having come to light at a time when no archbishops were there to fulminate against it, or, better said, when such fulminations would only have helped it along.

The Argentine tango (which must not be confused with the Spanish tango) is a slow melody in 2-4 time. A considerable number of musical frills, which had their counterpart in the dance, adorned it in its early stages. But, as years passed, such finery was deemed to be uncalled for, and consequently discarded. The dance--and the music polished itself up and received admission to social salons after the World War. It has attained considerable vogue in these days of artistic deterioration.

In order that these remarks should not be closed on a note of disapproval, mention will be made of the fact that the few Patagonian-Araucanian Indians still surviving (who, like their North American confrères, have gone into the real estate business) play on wind instruments a tune they call *loncomeo*, to which, although it seems rather weird to cosmopolitan ears, they dance with particular élan.

From an old lithograph.

THE "CIELITO" IN 1841.

This dance of Uruguayan origin, at one time extremely popular, has now disappeared, though its charming music has survived in both Uruguay and Argentina to the present day.

MAPPING FROM THE AIR[1]

By R. S. PATTON

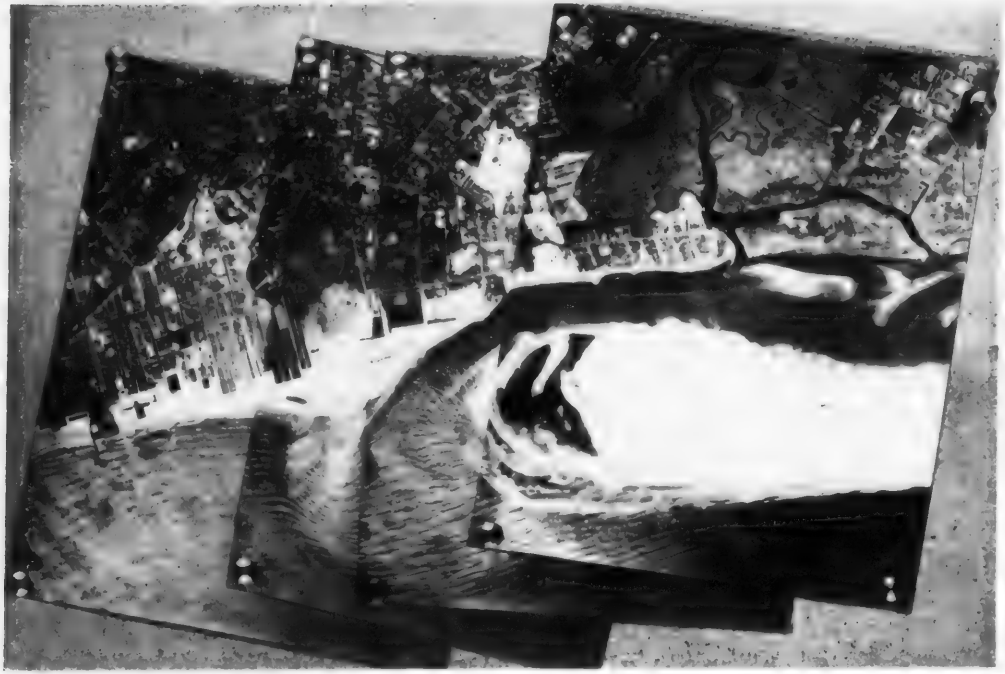
Director, United States Coast and Geodetic Survey

MAN'S distinct vision is limited to a few inches and his view point usually is such that the most distant object he can see is only a few miles away. To transcend these limitations, he has invented maps—maps which place any part of the earth beneath the scope of his glance, that he may plan his actions in accordance with its geographic features. One of his most recent inventions, two properly made aerial photographs under a suitable stereoscope, furnishes a spatial or three dimensional model of the part of the earth it portrays, which is unapproached by any other method for observing and recording complete detailed information. Modern aerial cameras take these models in a few seconds and later they can be made available at any number of offices for many special studies as well as for mapping. The product of one photographic flight may be studied by foresters for forestation, by geologists for structures indicating possible mineral wealth, by agriculturists for soils, and by engineers for water power, navigability of streams, and routes for highways, railroads, or transmission lines. Each specialist can examine the photographs for the particular data he needs, data all too likely to be omitted or generalized into insignificance when a country is shown on a general map by hand drawn lines and conventional symbols.

This ungeneralized, almost unlimited detail of the photographic record is one of its principal advantages. In fact, even though an engineer makes a survey on the ground and maps it for himself with a special use in mind, in trying to save time and expense he is likely to omit information which would be of great assistance in solving problems which he can not foresee, but which arise later in the course of his work. If the model of the ground furnished by good aerial photographs under a stereoscope be available, he can get this extra information directly from them without another trip to the locality. If he can not do the mapping himself, but has the photographs at hand, he need not fear the inaccuracies and the omissions which creep in when one man interprets and records the terrain upon a map for the use of another.

The area covered by a pair of photographs, even those from modern multilens cameras, is rather small. The photographs may be joined

[1] Prepared for the first assembly of the Pan American Institute of Geography and History, Rio de Janeiro, December, 1932.



Courtesy of the United States Coast and Geodetic Survey.

A MOSAIC OF AERIAL PHOTOGRAPHS

This small section of a mosaic of Far Rockaway, Long Island, illustrates the method of assembling the photographs preparatory to the actual map making.

together (after being rectified as may be necessary to a common datum plane) to form a mosaic or composite picture of larger areas. The mosaic retains the photographic detail, but an extra set of prints is necessary if it is desired to use a stereoscope to study the third dimension. Since the photographs are perspectives, any considerable differences of elevation of the terrain cause displacements of position which can be minimized only by a complicated rectification or a large increase in the number of exposures. However, much of the earth is sufficiently level to permit of making satisfactory mosaics. Their photographic detail and the ease with which they are understood by persons unfamiliar with map conventions make mosaics particularly valuable for visualizing certain problems, especially those of tax assessing and city planning. For many purposes for which variations in scale are not important, simple mosaics without rectification are entirely adequate. In fact, in areas where no large scale maps exist, strip mosaics of proposed routes for pipe lines, electric transmission lines, and highways form one of the most important commercial uses of aerial photographs. Simple mosaics can be made at relatively low cost. They insure consideration of all features adjacent to the route. The airplane taking them does not invade private property nor inflate the price of the proposed right of way, unavoidable handicaps of ground surveys.

When exact scale is required for country of appreciable relief, when it is desired to emphasize certain information needed for special purposes and to omit the remaining detail for the sake of clearness, or when the size of the area to be shown on a single sheet becomes large, it is necessary to use line maps. In the few years in which aerial photographs have been available, they have shown certain inherent advantages over ground methods which guarantee their increasing use for making such maps.

In all mapping upon the ground the precision of the resulting product is variable. A few points are located with a high degree of precision. Then there is a large group for which the precision may be characterized as good. Finally, there will be some minor features which, for reasons of economy, are merely sketched or omitted entirely. All this is necessary if the cost of the map is to be kept within reasonable limits. There is a further disadvantage in that this sketching must show the information as if viewed from above, while the topographer usually has only a limited view from the side. On the other hand, when aerial photographs are used for compiling the map, all detail visible from the air may be traced—not sketched—from the photographs with the same precision as the measured control points are plotted. The superior quality of detail thus obtained in maps compiled from aerial photographs is one of their outstanding advantages. Such superiority can not be duplicated by any econom-

ically practicable means upon the ground. It is of such value to the map user for identifying his position on the map in the field that it will undoubtedly cause an increasing demand for aerial surveys as map users become acquainted with it.

A further advantage of aerial photographs is that it is difficult in the compilation of such maps to make gross errors or blunders in measurement. Properly overlapped photographs are as self-checking as a scheme of quadrilaterals in triangulation. At times natural changes are so great as to throw doubt on former ground surveys, whether there were any errors or not. Occasionally changes in the coast line, for instance, are so extraordinary as to cause law suits over the original surveys. If due care be taken with materials and processes, the photographs form a permanent record not likely to be challenged. As a country develops, such records may be of great value in preventing costly legal disputes over boundaries, riparian rights, and land ownership. Data of great usefulness in the study of shore-line and river erosion, the building of deltas, etc., may be obtained from photographs taken at suitable intervals. Here again no map maker's ideas of how the changes came about modifies the photographic record, but each student may approach the data afresh, unhandicapped by the mental slant of those who have measured the data before him.

In governmental surveys the problem of making accurate maps is usually simpler than keeping the maps reasonably up to date. Because of the uniform precision of a map which has been well compiled from aerial photographs, any permanent, well-defined object, such as a building foundation, a road intersection, or a point of rock, becomes in effect a monumented control station for future revisions or resurveys of similar scales. In practically all regions of importance to man a basic aerial photographic survey will show enough permanent detail for the accurate plotting of detached multilens aerial photographs without further ground control. At very low cost such surveys may be kept reasonably up to date as to important detail during the necessarily long interval between complete revisions by using detached aerial photographs. It is seldom that any but the very best of large-scale ground surveys show enough detail with the requisite accuracy for revision by isolated photographs in this manner. However, almost all types of maps based on good ground control, except those of mountainous country, may be revised to advantage by completely rephotographing their area.

There are certain limitations to aerial photographs which may make them less desirable or even quite absurdly expensive at times, particularly for small projects. The most important of these is that practically cloudless weather is necessary for good mapping photographs. In most of the United States such days occur about four

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MOUTH OF THE MAGDALENA RIVER, COLOMBIA.

Aerial photograph taken at intervals are of invaluable aid in the study of changing shore lines and the formation of deltas.

times a month, but in the winter season there may be two or three months without a single favorable day. In all except arid or semi-arid regions the cost of holding a plane and crew in readiness to take advantage of good photographic weather is usually one of the largest factors in the cost of photographs, especially for small projects.

The photographs show only that which is visible from the air. This, of course, limits their usefulness in surveys of tropical jungles so dense that the sky can seldom be seen from the ground. However, even in tropical jungles, the more important rivers and lakes as well as channels through mangrove swamps, can be delineated to advantage.

The use of aerial photographs in mountainous country, where differences in elevations exceed 30 per cent of the flying height, is apparently limited at present to small scale or exploratory surveys, unless the region is of such importance as to warrant the expense of a large scale compilation with a stereoscopic plotting machine. In mountainous terrain, particularly above the timber line where views nearly equal in scope to those from the airplane can often be obtained, terrestrial photographs offer many advantages. The accurately known coordinates, highly corrected lenses of small aperture, the finer grained, slower emulsions of terrestrial photographs give better results than are likely to be obtained in mountainous country from

the air. When a modern stereoscopic plotting machine is available a combination of terrestrial photographs for steep slopes and aerial photographs for the valleys is considered to be best adapted to mountainous country.

A further limitation of aerial photographs is that all names, a very important feature of maps, must be obtained by a field inspection on the ground with the photographs, or taken from those shown on existing maps. A field inspection is nearly always necessary to obtain data for interpreting the photographs if draftsmen unfamiliar with the terrain are to compile the maps. In addition, when extensive areas must be photographed at low cost, a few details desirable on the map ordinarily will not appear clearly in the photographs because of unfavorable light conditions, overhanging trees, or small defects in photographic materials and processes. The filling in of this information, data for interpretation of the photographs, and the names may all be taken care of conveniently while executing the ground control needed for the class of maps to be compiled.

Although aerial photographs make available decided improvements in the accuracy of map detail, they do not as yet offer much toward control surveys. An entirely different class of accuracy is required for map data from that required for the coordination of maps of large areas and for the establishment of monuments marking boundaries or precise distances on the ground. The data shown on the maps or photographs are reduced hundreds or thousands of times, and because of this reduction it becomes impossible to represent positions with high precision. A fine dot on a map or photograph on a scale of 1 : 10,000, for instance, represents two meters on the ground, yet on this scale a map 50 inches long shows only 8 miles of the earth's surface. The grain of the best emulsions at present available which have the high speed necessary for aerial photography is so large, and the effects of haze, of the rapid motion of the airplane, and of indifferent objects at which to point are so great that the probable error of measurements on aerial photographs is generally about 34 microns. On an aerial photograph at 1 : 10,000 scale, this would represent one-third of a meter on the ground. The equivalent error in pointing with a first order theodolite would be about 1 centimeter or about one thirty-fourth the error of the photograph. In addition, it is generally possible to use figures in triangulation which span from 10 to 100 or more of the photographs, since the photographs must be overlapped more than 50 per cent to secure a satisfactory chain of measurements. Even with this tremendous difference in accuracy between triangulation on the ground and from aerial photographs, it is still necessary to adjust ground triangulation when measuring around the boundaries of a State or across the area usually shown on a series of maps. It is evident, therefore, that aerial photographs, while offering

A BRAZILIAN HIGHWAY.

Mountainous regions with great variations in altitude rather limit the usefulness of aerial photographs to small scale or exploratory surveys.

marked improvement in the accuracy with which it is practicable to survey detail for maps, can not as yet dispense with control surveys upon the ground whenever the maps thus made must be coordinated with others or purport to show long distances accurately.

Until recently, aerial photographs have been too expensive to compile as well as to take for thinly inhabited country, or for other areas which can not support much expenditure for surveys. The single-lens vertical photographs cover such small areas that great numbers of them are required for sizeable projects. Such a complete ground control is required for accurate compilation of single-lens photographs as to tend to limit their usefulness to comparatively level areas, or to those areas so thickly settled as to justify the high cost of large-scale surveys and the expense of machine plotting. A notable exception has been the method developed by the Canadians of compiling oblique photographs containing the horizon by superimposed grids. This method is quite efficient for flat country on scales smaller than 1:100,000, but is not adapted to country of considerable relief, such as that bordering most of the Pacific, nor to medium or large scales.

Recently multilens cameras have been developed which promise a solution of the problem of combining accuracy and economy in mapping on medium and small scales from aerial photographs. In the United States, the Army Air Corps has developed a 5-lens camera

of 6-inch (15.2 cm) focal length and 140° field. The camera is a rugged and reliable instrument. On one of its earliest jobs, the first model photographed without a single failure a project for the Coast and Geodetic Survey, which required over 400 photographs with a 10-second exposure interval. The camera produces a composite photograph in the form of a maltese cross 32 inches wide, which covers a mile of ground for each thousand feet of elevation of the airplane. Thirty-six hundred square miles were recently photographed with this camera in less than three hours on a scale of 1:40,000 at a

Courtesy of the United States Coast and Geodetic Survey.

A 4-LENS CAMERA FOR AERIAL MAPPING.

A similar camera was used in the aerial survey of the territory involved in the Guatemalan-Honduran boundary controversy. A total of 1,300 photographs were made of an area of 2,470 square miles.

cost of only 20 cents per square mile for operating expenses and photographic materials. The tremendous span of these photographs permits more accurate orientation of the photographs with fewer adjustments and a proportionately increased spacing of ground control. These advantages mean that increased economy in mapping as well as in photography is made possible by this camera.

Recently the Special Boundary Tribunal, appointed to arbitrate the boundary question between the Republics of Guatemala and Honduras, ordered the photographing and mapping of a section of the disputed territory. Adequate topographical information did not

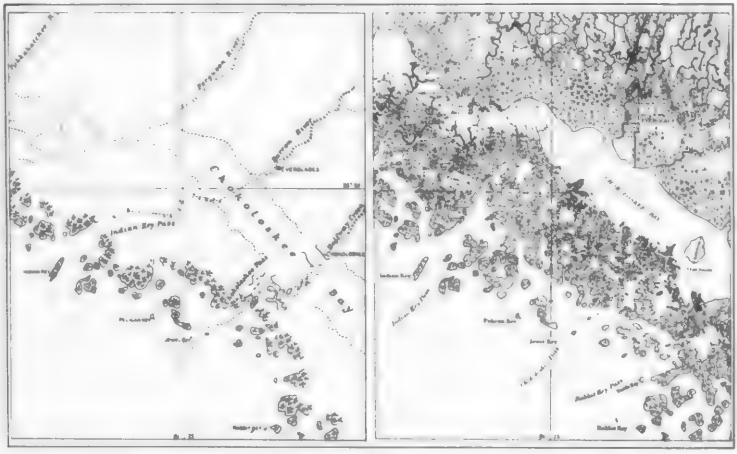
exist in this area, which is very rugged and in many places sparsely inhabited. The topographic relief in the area ranged from sea level to over 7,000 feet. The aerial method of surveying was chosen as the quickest way of supplying the needed information and, in addition, its low cost was an important factor. The United States Army Air Corps photographed the project, using a 4-lens camera, which is somewhat similar to the newer 5-lens camera with the exception that the advance wing photograph is omitted. In all, 1,300 photographs covering 6,500 square kilometers were made at an elevation of 13,000 feet above sea level, giving an approximate sea level photographic scale of 1:24,000. Photography was completed in 31 days, though flying was considerably handicapped by the rainy season.

The photographs were studied stereoscopically and matched in strip mosaics. Line maps, showing the culture and drainage data traced from the strip mosaics, were assembled on a scale of 1:100,000. Existing maps supplemented by additional ground control were used as the base for map compilation. The maps and photographs were used by the tribunal in studying the topographical and culture conditions in critical areas and also to mark and describe the line of award. The ground control work was started in August 1932, the maps and photographs were delivered to the tribunal in December, and the award was rendered on January 23, 1933. The maps were annexed to and made a part of the award.

In Europe there has been developed a 9-lens camera of 5.35 centimeters focal length and the same scope as the 5-lens. If the detailed information available on aerial photographs at scales of 1:40,000 and larger can be dispensed with, as perhaps it may to advantage for small-scale maps of undeveloped areas, the short focal length of this camera offers lower costs for photographic materials and increased ease of compiling. But when one reflects that on a 1:100,000 scale an object 100 meters in size occupies only one-tenth of a millimeter on the photograph, the extent to which detail is generalized or disappears on such photographs may be comprehended. Since one of the chief advantages of aerial photographs is the large amount of detailed information they afford, the sacrifice of much of this information by the short focal length of this 9-lens camera would not appear to be justified except when the funds for photographic materials and for reduction of maps are very limited and small-scale maps only are desired.

Another European camera has four lenses of 13.5 centimeter focal length and a field of 83°. The manufacturer has also recently announced the adaptation of his stereoplanigraph machine to plot the whole field of this 4-lens camera without special adjustments for the several chambers. This should greatly increase the efficiency of the combined product of machine and camera. Until recently

machine methods of plotting maps cost more than the graphic radial line methods combined with contouring on the plane table or form line sketching between spot heights, except for country difficult of access and important enough to require contours rather than form lines. So large an investment for machines and trained personnel is required that a considerable amount of important work must be in prospect to justify their use. However, such improvements as the adaptation of the machines to the use of multilens photographs with only one setting and the simplification of their adjustments, optics, and mechanical movements will probably greatly extend the field of economic usefulness of the machine method of plotting in the future.



Courtesy of the United States Coast and Geodetic Survey.

MAPPING FROM THE AIR MORE ECONOMICAL.

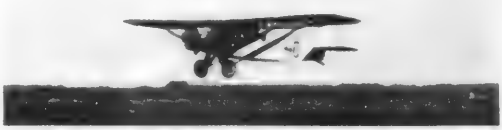
The plane table map at left and the air-photograph map at right with its vast amount of detail were made at approximately the same cost.

When considering the use of aerial photographs for mapping operations of large scope, it is important to keep in mind that photographs taken with a carefully adjusted and calibrated camera may be compiled by several different methods in turn, each method furnishing a special map which meets a particular need with the greatest economy. For example, the area may be photographed at minimum expense with a multilens camera, and a rough mosaic or a small-scale reconnaissance map may first be compiled. This preliminary work will show, let us say, that there is a good water power site, some fertile country worth developing, and two or three practicable routes for highway or railroad to this region. Diapositives on glass may be made from the films of the water-power site, and with a little extra

ground control, if a plotting machine be available, 5-foot contours may be drawn. Similarly, study of extra prints under the stereoscope will probably be sufficient to select the best general route for the highway. If much grading will be necessary, as for a railroad, a strip of photographs on a larger scale may be taken of the best route and 2-foot contours drawn with the plotting machine. In the meantime, the plotting of a topographic base map by the radial-line method may be going forward. Fairly good contours may be sketched from the photographs under a stereoscope between a number of spot heights obtained on the ground, or sheets showing the planimetric detail may be contoured in the field on a plane table, whichever method may be better adapted to the personnel of the organization and to the terrain. The completed base map may then be used to advantage for overprints showing the forestation, the types of soils, geological data, and similar information.

This discussion of mapping from the air of course applies only to the present. In no aspect of the subject is this statement more pertinent than to a discussion of costs in time and funds. In general, where the highest accuracy is required and the terrain is quite accessible, these costs seem to average about one-fourth less for aerial photographic surveys made with trained personnel and adequate equipment than for plane-table work on the ground. If the requirements for accuracy of position be relaxed or if the terrain becomes inaccessible, the saving of the photographic methods in time and money increases many fold. There are numerous areas such as mangrove swamps, deltas with complicated waterways, and forested hills where no other method of adequate mapping is economically practicable. With the reduction in costs to be expected from the future development of multilens cameras and of aviation, the opinion is hazarded that practically all the lands of this earth will be recorded on aerial photographs before the end of the present century.

Be that as it may, the use of aerial photographs in mapping now offers economy of time and money for sizable projects, a permanent record without omissions or blunders, and more exact and practically unlimited detail, all of which are important contributions.



BRAZILIAN VISITORS TO THE PAN AMERICAN UNION

TO the Pan American Union fell the privilege of receiving on September 6, 1933, a group of about 130 Brazilians on a cultural visit to the United States. The Touring Club of Brazil had organized the trip, and the distinguished citizens who composed the party were traveling under the leadership of Dr. Paulo de Magalhães who, besides being director of *Cinetheatro*, in Rio de Janeiro, is also well known as a playwright, attorney, and journalist.

Rarely does this home of the American Republics have the pleasure of welcoming so large a group of citizens from any one country. Indeed, it was as if a bit of Brazil had been transferred into its midst. The Hall of the Americas, where the guests were received by Dr. Rowe, the Director General of the Pan American Union, and members of the staff, hummed to the musical sound of Portuguese, pleasant indeed to the ears of those who love the beautiful language of Camões and Alencar. After a speech of warm welcome by Dr. Rowe, the guests were shown over the building; at the conclusion of their visit, a talking picture, in which greetings were exchanged between the Director General and Dr. Magalhães, was taken of the group, for distribution in Brazil.

That evening the travelers were special guests at a concert of Latin American music upon the esplanade of the Union. In their honor, therefore, and also in honor of the Brazilian Independence Day which, through a happy coincidence, fell upon the following day, there were included in the program several favorite Brazilian pieces, notably selections from operas by Carlos Gomes, the great Brazilian composer, and the Brazilian national anthem. The renditions of the Brazilian selections by the United States Navy Band and by the vocal soloist of the evening, Señor Hector Lara of Mexico, was vigorously greeted by the visitors, with prolonged applause and enthusiastic *bravos*.

On the following afternoon, their national holiday, the group was entertained by the Brazilian Ambassador, His Excellency R. de Lima e Silva, and in the evening they reciprocated with a dinner to him, at which Dr. Rowe was also a guest.

An interesting feature of the group was the large number of men and women it contained outstanding in the fields of letters, science, education, and public affairs, all of whom were eager to obtain the greatest amount of information possible in their respective spheres.

BRAZILIAN VISITORS TO THE PAN AMERICAN UNION.

The United States was the country selected for this year's annual trip organized by the Touring Club o Brazil, which was taken by a group of 127 Brazilians.

So after two days of intensive sightseeing, the members of the tour divided into smaller units according to their respective interests.

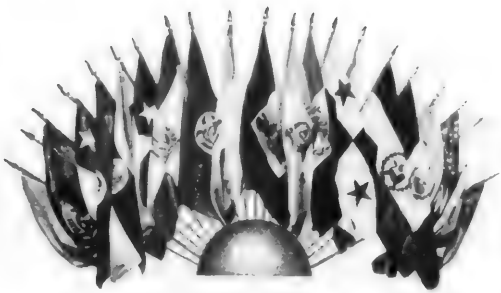
A large party of physicians, accompanied by Dr. Bolivar J. Lloyd, assistant to the Director of the Pan American Sanitary Bureau, visited a number of institutions in Washington, including the Mount Alto Veteran's Hospital; Garfield Hospital, where the X-ray and radium work proved of particular interest; Walter Reed Military Hospital; the Episcopal Eye, Ear, Nose, and Throat Hospital; and the National Institute of Health. A group of teachers, accompanied by Miss Heloise Brainerd, Chief of the Division of Intellectual Cooperation of the Pan American Union, visited the National Education Association; the Progressive Education Association; the National Congress of Parents and Teachers; the Association for Childhood Education; the World Federation of Educational Associations; the Washington Child Research Center; a private nursery school; and the United States Office of Education. The engineers and architects who were members of the party included in their visits the Bureau of Standards, with which they were very much impressed. During their entire stay, members of the party were assisted by members of the staff of the Portuguese edition of the BULLETIN.

Washington almost outdid itself in an effort to provide blue skies and warm days for its southern visitors, who, having just experienced an extremely cold winter in their own country, were pleasantly surprised at the warmth of what they expected to be the beginning of our northern autumn.

The distinguished travelers left Washington on September 8, by special train. At the Union Station, to bid them *bon voyage*, were the Brazilian Ambassador and members of his staff, the Director General and officials of the Pan American Union, and other friends and well-wishers.

The Touring Club of Brazil was organized for the purpose of facilitating travel in all parts of the world, and includes in its program a visit to at least one foreign country annually. This year the Century of Progress Exposition in Chicago provided a powerful incentive to make the United States the goal, although travel to this country possesses natural attraction for the Brazilians. In this respect, one of the group, Dr. Mario Accioly, a lawyer from Rio de Janeiro, said, "The political and economic *rapprochement* between the United States and Brazil is an accomplished fact. We Brazilians clearly feel this to be the case as we go through the country; only one thing remains to be done—the shortening of the distance between the two nations by a fast steamship line or by the realization of the projected intercontinental railroad, which we all fervently desire."

The travelers arrived in Washington after a week in New York and Philadelphia, and left for Chicago, where they were to spend a week at the Century of Progress. Then the group will divide, some members returning to New York via Detroit and Niagara Falls, others visiting the Pacific coast before sailing. Still others plan to extend their stay in the United States in the interests of their respective activities. Among these are Dr. Magalhães, who, as president of the Professional Actors Syndicate of Rio de Janeiro, will proceed to Hollywood to supervise the making of films with Brazilian stars; Senhora Celina Padilha, Federal Inspector of Public Instruction in Rio de Janeiro and Secretary of the Federation of the National Education Societies, who will spend 1 or 2 months in intensive investigation into American educational methods; and Senhorinha Maria Delphina Cardoso, Federal Inspector of Instruction in São Paulo, who will visit secondary schools and study methods in anticipation of the establishment of a model secondary school in São Paulo. The brilliant young woman journalist Nair Mesquita, the owner and editor of *Vanitas*, a weekly magazine published in São Paulo, is seeking first-hand impressions of the United States.



PAN AMERICAN UNION NOTES

COLUMBUS MEMORIAL LIBRARY

News from American libraries.—On June 24, the *Biblioteca Argentina para Ciegos* (Argentine Library for the Blind) celebrated the anniversary of its founding. In the morning members of the board of trustees and invited guests placed a wreath on the grave of the poetess, Vicenta Castro Cambón, the founder of the institution. In the afternoon friends of the institution gathered in the auditorium of the library to hear an address by Dr. Augustín C. Rebuffo. The library contains 5,000 volumes in Braille. An exhibition and sale of handicraft of the blind concluded the celebration.

A reading room for working people has been opened in the *Biblioteca Nacional* in Santiago, Chile. It bears the name of a great friend of labor, Fermín Vivaceta.

The cornerstone of the Biblioteca Nacional of Colombia, which is being erected in the Plaza de la Independencia in Bogotá was laid on August 7. Dr. Daniel Samper Ortega, the librarian, delivered the principal address.

Pamphlet for distribution.—The Columbus Memorial Library has received a few copies of *Mineral resources and mining regulations of Colombia*, published by the Department of Mines and Petroleum of the Ministry of Industries, Bogotá, 1933, for free distribution as long as the supply lasts.

Book exposition in Buenos Aires.—The *Museo Nacional de Bellas Artes* is planning a book exposition to be held in October. It will graphically describe the history of the book from the earliest times to the present day. There will be a course of lectures on the entire book craft, and many rare volumes will be displayed.

Courtesy of "Cromos"

THE NATIONAL LIBRARY OF COLOMBIA, BOGOTA

The cornerstone of this modern building, designed to house adequately the National Library and Archives, was laid August 7, 1933.

New books and magazines.—The following list has been compiled from the books which have been received during the past month:

La ganadería argentina y su comercio de carnes, [por] Juan E. Richelet. Buenos Aires, J. Lajouane & cía., 1928. 333 p. 23½ cm.

La jaula vacía, el bibelot y otros cuentos, por Camilo Cruz Santos. San José, Editorial Alsina, 1930. 165 p. 22 cm.

La rueca de la sonrisa [por] Pedro Moreno Garzón. Caracas, Lit. y tip. Vargas, 1930. 144 p. front. 20 cm.

El ferrocarril inter-continental pan-americano; su estado actual, por Santiago Marín Vicuña . . . Santiago, Prensas de la Universidad de Chile, 1933. 130 p. fold. maps. 26 cm.

La nacionalidad de la mujer casada, memoria presentada por Aníbal Matte Pinto . . . Santiago de Chile, Imprenta "El Imparcial", 1933. 76 p. 25½ cm.

Anuario agropecuario, año 1932, [compilado por la] Dirección de economía rural y estadística, de la Ministerio de agricultura de la República Argentina. Buenos Aires, Talleres gráficos del Ministerio de agricultura de la nación, 1932. 425 p. fold. maps, tables, diagrs. (part. fold.). 26 cm.

Naval air pilot, Mexico, corrected to May 1, 1933 . . . issued by the Hydrographic Office under the authority of the Secretary of the Navy. Washington, U.S. Govt. print. off., 1933. 95 p. illus., col. maps (part. fold.). 23 cm. [Contents: pt. 1. General information concerning routes, distances, regulations, etc.; pt. 2. Detailed information on seaplane anchorages and landing fields.]

Historia de Morón, con datos geográficos y apéndices, por el Dr. Pedro G. Subirats y Quesada . . . Habana, Imp. de Cultural, s.a., 1929. 167 p. front. (port.), ports, fold, maps. 23 cm.

Guanina, novela de costumbres siboneyas [por Pedro G. Subirats y Quesada]. [Habana, Imprenta P. Fernández y ca.] 1926. front. (port.), illus. 18 cm.

Estética de la tragedia mexicana [por] Felix F. Palavicini. Mexico [Imprenta Modelo] 1933. 190 p., plates. 22½ cm.

Anuario catalano-balear; mitología, historia, geografía, artes, letras, demotismo, efemérides hespéricas de enero a junio [por] Antonio Cursach Truyol. Buenos Aires, J. J. Rosso [n.d.] 175 p. illus., col. plates (part. fold.) ports. (part col.) 29 cm.

Tópicos bolivarianos; glosas al "Diario de Bucaramanga," por Monseñor Nicolás E. Navarro . . . Caracas, Tipografía Americana, 1933. 137 p. 22½ cm.

Economia y reseña histórica de los ferrocarriles del Perú. [Publicación de la Dirección de obras públicas y vías de comunicación del Ministerio de fomento de la República del Perú] [Lima, Imprenta Torres Aguirre] 1932. 89 p. port., tables (part. fold.) 25 cm.

Iconografía de próceres argentinos; información biográfica, por José Juna Biedma. Buenos Aires, 1932. 181 p. ports. 19 cm.

Proemio para la obra de don Alberto Edwards "El gobierno de Don Manuel Montt" [por] Luis Barros Borgoño. Santiago, Editorial Nascimento, 1933. 252 p. 19½ cm.

La poesía de Julio Herrera y Reissig. Sus temas y su estilo, por el Dr. Y. Pino Saavedra. Santiago. Prensas de la Universidad de Chile, 1932. 148 p. 23½ cm.

Consultor práctico de la legislación chilena del trabajo . . . por Armando Rojas Valenzuela y Alberto Ruiz de Gamboa A. . . . Santiago, Imprenta Nascimento, 1933. 382 p. 27 cm.

New magazines and those received for the first time during the past month are as follows:

The Venezuelan commercial review. Liverpool, England, 1933. 12 p. 27½ x 29 cm. Vol. 1, no. 1, July 24, 1933. Irregular. Address: Consulate-general of Venezuela in Liverpool, North House, North John Street, Liverpool, 2, England.

El Tribuno; bisemanario liberal radical. Quito, 1933. 8 p. 40 x 30 cm. Año I, núm. 18, julio de 1933. Bi-weekly. Editor: Sr. J. M. Sánchez Carrión. Address: Mejía nº. 41, Quito, Ecuador.

El derecho; publicación del Centro de estudiantes de notario. Montevideo, 1933. 69 p. 24 x 17 cm. Año XII, nos. 1–3, 1933. Address: Calle Colonia 1800, Montevideo, Uruguay.

Revista de derecho y ciencias sociales; órgano de la Facultad de jurisprudencia de la Universidad Central. Quito, 1933. p. [113]–174. 27½ x 19 cm. Tomo 1, núm. 3, junio de 1933. Monthly. Address: Secretaría de la Universidad Central, Apartado núm. 166, Quito, Ecuador.

Revista de educação; orgão do Departamento de educação do estado de São Paulo. São Paulo, 1933. 296 p. 25 x 17 cm. Vol. 1, nº. 1, março 1933. Quarterly. Address: Departamento de educação, Praça João Mendes, São Paulo, Brasil.

Revista de la Asociación médica panamericana; órgano oficial de la Asociación medica panamericana. Habana, Cuba, 1933. Año 1, 2ª epoca, no. 1, julio de 1933. 56 p. ports. 24 x 15½ cm. Editor: Sebastián Figueras. Monthly. Address: Panamerican medical press, inc., Apartado no. 994, Habana, Cuba.

"Crisálida"; revista quincenal, órgano del Ateneo "Rubén Bermúdez". San Pedro Sula, Honduras, 1933. Año I, número 1, 1.º de agosto de 1933. 24 p. illus., ports. 16½ x 20 cm. Semi-monthly. Address: "Crisálida," San Pedro Sula, Honduras.

La fraternidad, publicación internacional; boletín del Instituto hispanoamericano del relaciones culturales. Madrid. 2.ª época, número 2. 24 p. 24 x 17

cm. Irregular. Address: Instituto hispanoamericano de relaciones culturales, General Castaños, núm. 5, Madrid.

Revista agrícola del Tolima; órgano mensual de la Sociedad de agricultores del Tolima. Ibagué, Colombia, 1933. Volumen I, número 2, julio de 1933. p. [27]–50. illus. 24 x 17 cm. Editor: Lic. Bernardo Ortiz G. Monthly. Address: Sociedad de agricultores del Tolima, Ibagué, Departamento del Tolima, República de Colombia.

Alma nacional; revista mensual de educación. Medellín, Colombia, 1933. Volumen I, número 1, 1.° de agosto de 1933. 24 p. 24½ x 17 cm. Monthly. Address: Medellín, Departamento de Antioquia, República de Colombia.

Educación; órgano de la Facultad de educación de la Universidad Nacional. Bogotá, 1933. Año 1, número 1.° agosto 1933. 64 p. 24 x 17½ cm. Editor: Arcadio Dulcey. Monthly. Address: Facultad de educación de la Universidad nacional, Bogotá, República de Colombia.

O solo; revista do Centro agricola Luiz de Queiroz (dos academicos de agronomia) Piracicaba, Brasil, 1933. Anno XXV, nos. 3–4, março–abril 1933. 71 p., illus., port. tables. 23 x 16 cm. Bimonthly. Editor: Luiz Aristeo Nucci. Address: Centro agricola Luiz de Queiroz, Piracicaba, Brasil.

Senda, revista de ciencias, letras y arte; órgano de la Escuela normal nacional "Alejandro Carbo." Córdoba, Argentina. N°. 1, julio 1932. 44 p. illus. 32 x 23½ cm. Monthly. Address: Colón, 950, Córdoba, República Argentina.

El gráfico económico; semanario comercial, bursátil y financiero. Santiago de Chile, 1933. N.° 1, 5 de junio de 1933. 20 p. tables, diagrs. 27 x 18½ cm. Weekly. Address: Casilla 13224, Santiago de Chile.

La escuela costarricense, revista pedagógica mensual; órgano de la Secretaría de educación pública. San José, 1933. Año II, n°. 8, 15 de febrero de 1933. 20 x 13½ cm. Monthly. Editor: Moisés Vincenzi. Address: Secretaría de educación pública, San José, Costa Rica.

Revista tabaco; órgano de publicidad de la "Alianza tabacalera." Habana, Cuba, 1933. Año I, número 4, julio de 1933. 20 p. 31½ x 24 cm. Monthly. Editor: José Rivero Muñiz. Address: Aldama (Amistad) 88, altos, Habana, Cuba.

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PAN AMERICAN PROGRESS

AGRICULTURAL EXPERIMENTATION IN PERU

Peru is a country of great potential agricultural wealth whose fullest development depends upon careful training and research both in agricultural schools and in experiment stations. Although this fact had long been recognized, early attempts to found such institutions met with failure until the establishment of the National School of Agriculture and Veterinary Science in Lima, founded in 1901 and opened the following year. Technical training and experimentation began together and have developed side by side; in the next 10 years 6 experiment stations, specializing in as many products, were established. The first was a grape and wine service, established in 1903 and composed of an enological laboratory and a vineyard where native and imported varieties of grapes were studied; at first a branch of the agricultural school, it was made independent in 1906 as the Enological Experiment Station of Lima, with substations at Moquegua and Ica. In 1906, too, the Sugarcane Experiment Station was opened, followed in 1907 by a meteorological station, the forerunner of the present national meteorological service; in 1908 by the Laboratory of Agricultural Microbiology, to make ferments, serums, and vaccines; in 1909 by the Cotton Experiment Station, the Animal Husbandry Station, and the Bureau of Forestry and Horticulture. In 1911 all these activities were combined in a single organization called the Central Agricultural Station and put under the supervision of the director of the agricultural school. During the next 20 years there were few changes, although one or two—the Animal Husbandry Experiment Station and the enological substations—ceased to function.

The three most important institutions for many years were the Sugarcane Experiment, the Animal Husbandry, and the Cotton Experiment Stations. The first studied among other things the different valleys of the Republic, to ascertain those best adapted for cane growing; the varieties of cane, to decide which were most suitable for introduction in the country; systems of planting and irrigation; cane diseases and proper measures to avoid and combat them; kinds of mills and the most profitable uses for by-products and residuum; the organization of experiment fields on private estates, where such service was requested; tests and analyses of soils, water, by-products, and fertilizers; free consultation, information, and analysis for canegrowers;

propaganda, by means of public lectures, circulars, and bulletins, for free distribution to all interested in the sugargrowing; and the compilation of special statistics on the subject.

The Animal Industry Station was established to study the native stock; to import and breed specimens of different foreign species and breeds to ascertain which might be most easily acclimated and most valuable in improving existing species in the country; to experiment with forage crops; to help stockbreeders in their choice of sires, methods of breeding, treatment of animals, and the hygienic measures necessary to improve the condition of flocks and herds; to increase practical knowledge of approved dairy methods; to inform owners of the best breeds of barnyard animals, offering specimens for sale and showing how to obtain the best results in the production of eggs, meat, feathers, etc.; and to establish a stud service.

The Cotton Experiment Station was founded to improve the cultivation of cotton in Peru, and its specific duties included: the study both of conditions in the different valleys where cotton is grown and of the methods of cultivation followed in each region; the establishment of branches where tests and experiments might be carried out under local conditions; the scientific study of each variety of cotton at present cultivated and the introdution and acclimatization of new ones; the free distribution of seeds; experiments with agricultural machinery, fertilizers, and the rotation of cotton with leguminous crops; the establishment of a consultation bureau for cotton growers; the study of noxious weeds; the distribution through the Ministry of Promotion of bulletins or circulars containing reports of experiments carried out, the results obtained, and recommendations to farmers.

These experiment organizations are those through which scientific experimentation was carried on in Peru for many years and information about best methods of work and the treatment of parasitical diseases were made available. The results have been truly gratifying, for many of the recommended procedures have become commonplaces in the rural districts. Through these institutions, too, new and better varieties of plants, especially sugarcane and cotton, have been introduced; but unfortunately in many cases they were not grown long enough to become acclimated, so that the results of such introduction have been negligible.

During the last few years new experiment stations regional in scope have been founded. The Puno Farm has done valuable work in improving the breeding of wool-bearing animals in the southern mountains; the Tumbes Station experiments with tobacco cultivation in the northern coastal regions; the Lambayeque Station carries on experiments and demonstrations, especially with rice, and has a meteorological station in that high northern valley; and the Piura

Agricultural Station has become one of the most important of the Republic.

During the 3 years 1929–31, the Commission for Promoting the Cultivation of Wheat increased and broadened its labors. The three matters especially undertaken by the commission were the study of wheat cultivation (1) on tablelands over 1,300 feet high, (2) on hills where the only water supply comes from the heavy daily mists, and (3) along the coast, where it has been abandoned because of the presence of fungus diseases. The work in the coastal regions, as well as the introduction of selected varieties in the districts already under cultivation in the mountains, proved especially valuable, for it has been most effective in the present agricultural crisis.

One of the newest and most important of the experiment stations in Peru was established in 1929 on the 150-acre farm "La Molina", near Lima. According to Law No. 5556, under which it was created, it was to be under the direction of the National Agrarian Society, and funds for its maintenance were to be provided from special taxes. From the beginning, the station has done special cotton, wheat, and sugar research of great importance. Recently its administration was taken over by the Bureau of Agriculture and Animal Industry, a step in the program of unifying national experimentation.

These institutions set standards and awakened in many trained agronomists an appreciation of the value of experimental work; but the difficulty of following one specialty long enough, because of transference from one station to another, prevented them from becoming experts in any one subject, and such experts are necessary for the advancement of scientific knowledge. Since July 24, 1931, however, all assistant agronomists in experiment stations and on regional agricultural committees have been required to spend 2 years in research at La Molina before being eligible for executive positions.

In a recent number of the *Boletín* of the Bureau of Agriculture and Animal Husbandry, Sr. José D. Valdivieso, director of the Bureau, gives, in addition to the brief history of experimentation in the Republic, an outline of the problems facing agriculture and the measures proposed to solve them. Work will be continued on the Agro-soil Map of Peru; this project, when completed, will provide information on climate zones and on soil, water, and other conditions for analogous agricultural zones. The new system of training specialists will put in experiment stations and administrative positions men whose theoretical knowledge is reinforced by practical experience. The value of experiment stations will be increased by the work of agricultural stations, where more laboratory and other scientific research may be carried on.—B. N.

TWELVE YEARS OF INDUSTRIAL EDUCATION IN URUGUAY

The Superior Council for Industrial Education (Consejo Superior de la Enseñanza Industrial), established by the law of July 12, 1916, has been carrying forward in Uruguay the work of vocational preparation begun by the former School of Crafts and Trades. In a recent publication, *Trabajo*, the president of the council, which functions under the Ministry of Industries, summarized in his annual report its accomplishments for the 12 years 1920–32.

At the end of that period there were 19 schools functioning under the council. Four of them are in Montevideo, and the others in San José, Canelones, Rivera, Salto, San Carlos, Florida, Mercedes, Rocha, Melo, Paysandú, Maldonado, Colonia Suiza, Carmelo, Trinidad, and Trienta y Tres. Special instruction in vocational subjects is also given at other schools in Montevideo and at Cardona, Constitución, Santa Lucía, Bolívar, and Tacuarembó. At the schools in Montevideo courses are given in applied arts; printing and binding; dressmaking; lacemaking; commercial art; ceramics; wickerwork; modeling and masonry; draftsmanship; house painting; carpentry; blacksmithing; mechanics; electrical mechanics; and similar subjects. In the schools in other parts of the nation, to these subjects are added others related to agricultural industries and cooperative undertakings, according to the needs of the region. The school buildings are modern and well constructed, and the instruction is thorough and conscientious. The efforts of the councils are directed to filling one of the country's basic needs—increased numbers of skilled workmen. The periodic exhibits of students' work, ranging from motors to cheeses, have met with the approval and warm praise of the public.

Great care is exercised in selecting the teaching staff of these institutions. The National Teachers College (Escuela Normal de Maestros y Profesores), offers the aspirants to such positions special preparatory courses. The instructors are appointed, except in special circumstances, by competitive examination, and no appointment is confirmed until after a year's service, so that satisfactory proof may be had of every teacher's capability. The diversity in training and experience of the instructors in these schools shows the latitude of the council in selecting the personnel, which is made up of teachers who have received special preparation at the Teachers College, civil and agricultural engineers, architects and other professional men, and master craftsmen who have received practical training in some industrial activity.

The law that created the council also provided that, for all boys from 14 to 17 years of age not receiving other education, at least nine hours a week of industrial training, except in cases of physical disability or lack of schools or facilities in the district, should be obligatory. The boys may attend either day or evening classes.

The Council for Vocational Training has been studying, within the limits of its authority, the subject of vocational guidance, and expects to publish in a few years the results of its research. It has

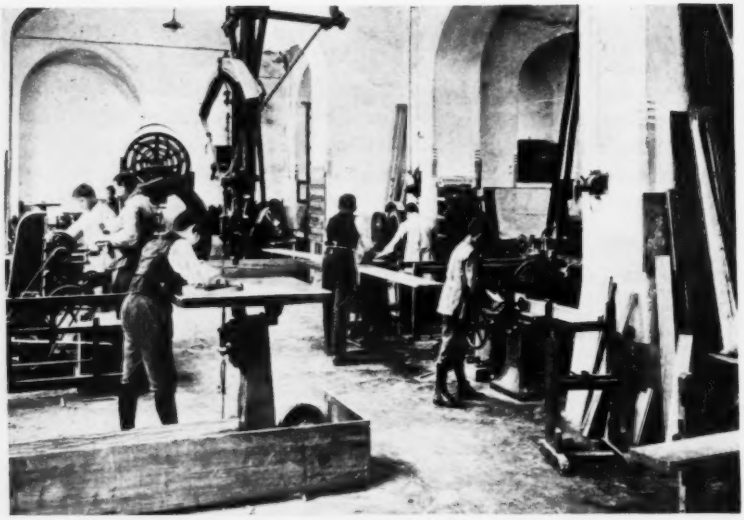
LOW RELIEF.

This interesting piece of work, designed and modeled by a woman student of Industrial School No. 1 in Montevideo, has been reproduced in cement to decorate the home of an Uruguayan artist.

Courtesy of "Trabajo."

recently inaugurated a Department of Vocational Guidance and Selection, to which a great deal of importance is attached.

In the rural districts, the council has been active in the formation of agricultural cooperative societies, employing as a nucleus for such organizations its various scientific-agricultural schools. Societies of this character have already been established at Melo, San Carlos, and Colonia Suiza. In the last place, the dairy school so successfully operated by the council is developing into a fermentation and investigation laboratory. The fact is worthy of note that it was through the efforts of this school that the production of cheese from pasteurized



CLASS IN MECHANICS.

According to law, all boys from 14 to 17 years of age not receiving other education must have at least 9 hours a week of industrial training.

milk was begun in the country. This is one of the measures that have enabled producers to make substantial savings. Other cooperative societies are now in process of formation in various parts of the country.

Some of the developments contemplated by the council include the establishment of new agricultural schools, provided with the necessary equipment for the manufacture of agricultural and dairy products, and the enlargement of schools already in existence. These improvements are soon to be carried out at Flores, San José, Durazno, Florida, Concordia, and Agraciada. This work, which will be done with the aid of local agriculturists, will have as its basis the formation of cooperative societies. Other proposed developments are the creation of establishments for the manufacture of agricultural and dairy products at Melo, Mercedes, and San Carlos, and the formation of a Department of Home Economics and Child Training at the school for women in Montevideo.

During the last twelve years, with an annual appropriation from the Government which has grown from 169,068 pesos in 1920 to 294,244 pesos in 1932, the Council for Vocational Training has not only performed a most commendable constructive task of remarkable proportions but has also increased its assets from 300,000 to 952,512 pesos.—A. C.